SOIL SURVEY

St. James and St. John The Baptist Parishes, Louisiana

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
in cooperation with
LOUISIANA AGRICULTURAL EXPERIMENT STATION
Issued August 1973

Major fieldwork for this soil survey was done in the period 1964-68. Soil names and descriptions were approved in 1969. Unless otherwise indicated, statements in the publication refer to conditions in the parishes in 1969. This survey was made cooperatively by the Soil Conservation Service and the Louisiana Agricultural Experiment Station. It is part of the technical assistance furnished to the Lower Delta, New River, and Crescent Soil and Water Conservation Districts.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SURVEY contains information that can be applied in managing farms, ranches, and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of St. James and St. John the Baptist Parishes are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the two parishes in alphabetic order by map symbol and gives the capability classification of each. It also shows the page where each soil is described.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the discussions in the section "Use of the Soils for Crops and Pasture."

Foresters and others can refer to the sections "Woodland" and "Descriptions of the Soils."

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Wildlife" and in the description of each mapping unit.

Community planners and others can read about soil properties that affect the choice of sites for nonindustrial buildings and for recreation areas in the section "Engineering Interpretations."

Engineers and builders can find, under "Use of the Soils in Engineering," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers in St. James and St. John the Baptist Parishes may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the information given in the section "General Nature of the Area."

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SOIL SURVEY OF ST. JAMES AND ST. JOHN THE BAPTIST PARISHES, LOUISIANA

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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE LOUISIANA AGRICULTURAL EXPERIMENT STATION

ST. JAMES AND ST. JOHN THE BAPTIST PARISHES are in the central part of southeastern Louisiana (fig. 1). They are about halfway between Baton Rouge and New Orleans and entirely within the Mississippi Delta. The elevation ranges from about 20 feet near the river to less than 1 foot above sea level in the marshes. Each parish is divided into two approximately equal parts by the Mississippi River. Including both sides of the river, there are about 74 miles of river front in the two parishes. The river for the 37 miles through the parishes accommodates deep sea vessels.

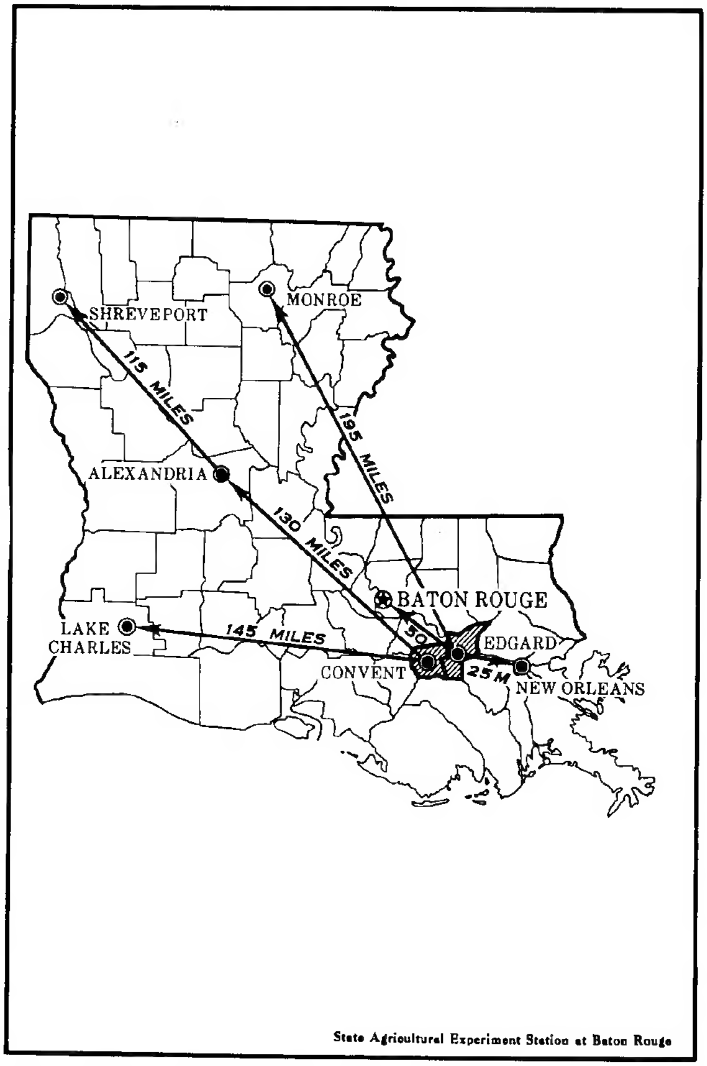

Figure 1.—**Location of St. James and St. John the Baptist Parishes, La.**

The total area of St. James Parish is 165,760 acres, and that of St. John the Baptist Parish is 188,271 acres. The survey area covers a total of 354,031 acres. Its population in 1960 was 36,808.

The parishes consist of three major areas—natural levees, swamps, and marshes.

The nearly level natural levees are in bands about 3 miles wide on both sides of the Mississippi River. The soils on the natural levees are high in natural fertility and are well suited to adapted crops. For many years the natural levees in the two parishes have been intensively farmed. The extent of the cleared areas closely approximates the limits of these natural levees. Numerous settlements are connected by a winding road that parallels the river on each side. Recently industrialization along the riverfront has rapidly expanded.

The large plantations and medium-sized farms on the natural levees produce mainly sugarcane. Smaller farms produce cabbage, peppers, shallots, beans, tomatoes, Perique tobacco, and other truck crops. St. James Parish supplies the world with Perique tobacco, which is prized in Europe as a rare blending tobacco. A manmade levee system along the Mississippi River protects the natural levees against floodwater from the river.

The swamps, which are slightly above sea level, occur in broad depressions or basins away from the Mississippi River but adjacent to the nearly level natural levees. Both mineral and organic soils occur in this frequently flooded area. The water table is at the surface most of the time. The native vegetation is hardwood forest, dominantly of the Cypress-Tupelo type. Very little of the swamp has been cleared and developed. Most of it is cutover Cypress-Tupelo forest. Flooding, poor trafficability of the soils, and subsidence of the organic soils in drained areas have discouraged development of this area.

The marshes, which are at or only slightly above sea level, are adjacent to Lake Maurepas, Lake Des Allemands, and Lake Pontchartrain. This is an area of or-

ganic soils where the water table is above the surface most of the time. The native and other vegetation is water-tolerant grasses, sedges, and forbs. The flood hazard and the subsidence of the organic soils in drained areas have discouraged development in this area also.

Excess surface water is a limitation to land use throughout the survey area. Drainage and flood control are major concerns.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in St. James and St. John the Baptist Parishes, where they are located, and how they can be used. The soil scientists went into the parishes knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in parishes nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey (*9*).[1]

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Sharkey and Convent, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Sharkey clay is one of three phases within the Sharkey series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. Three such kinds of mapping units are shown on the soil map of St. James and St. John the Baptist Parishes: soil complexes, soil associations, and undifferentiated groups.

A soil complex consists of areas of two or more soils, so intermingled or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. The name of a soil complex consists of the names of the dominant soil or soils. Convent complex is an example.

A soil association is made up of adjacent soils that occur as areas large enough to be shown individually on the soil map but are shown as one unit because the time and effort of delineating them separately cannot be justified. There is a considerable degree of uniformity in pattern and relative extent of the dominant soils, but the soils may differ greatly one from another. The name of an association consists of the names of the dominant soil or soils. Sharkey association, frequently flooded, is an example.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map may be made up of only one of the dominant soils, or of two or more. The name of an undifferentiated group consists of the names of the dominant soils, joined by "and." Convent and Barbary soils, frequently flooded, is an example.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way as to be readily useful to different groups of users, among them farmers, managers of woodland and rangeland, and engineers.

On the basis of yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others, then adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

[1] Italic numbers in parentheses refer to Literature Cited, page 44.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in St. James and St. John the Baptist Parishes. A soil association is a landscape that has a distinctive proportional pattern of soil. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a parish, who want to compare different parts of a parish, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The soil associations in St. James and St. John the Baptist Parishes are described on the following pages.

1. Convent-Silty alluvial land association

Frequently flooded, loamy soils

This association consists of loamy soils that formed in sediments recently deposited by the Mississippi River. It occurs as a narrow band on both sides of the river, between the river and the levee. Scouring and deposition caused by frequent flooding have resulted in a gently undulating series of narrow ridges and swales.

This association makes up about 2 percent of the survey area. It is about 50 percent Convent soils and about 35 percent Silty alluvial land. Commerce, Sharkey, and Vacherie soils make up the remaining 15 percent.

Convent soils occupy narrow ridges. Their surface layer is dark grayish-brown silt loam. Below the surface is grayish-brown, stratified silt loam and very fine sandy loam mottled with dark yellowish brown. These soils are somewhat poorly drained and moderately permeable. They are high in natural fertility. Reaction is medium acid to moderately alkaline in the surface layer and neutral to moderately alkaline in the underlying layers.

Silty alluvial land occupies the low, narrow swales and is subject to scouring and deposition. The surface layer is dark-gray or dark grayish-brown silt loam or silty clay loam. The subsoil is stratified and grayish brown to dark gray. Reaction, drainage, and permeability vary.

Most of this association is hardwood forest. A few of the higher areas have been cleared and are used for pasture.

This association is not suited to most cultivated crops. It is a good source of borrow material for construction purposes. Frequent flooding and scouring are the main management problems.

2. Commerce-Sharkey association

Nearly level, loamy and clayey soils

This association consists of loamy and clayey soils on the broad, natural levees of the Mississippi River and its distributaries. It occupies a broad band adjacent to the river and extends across the central part of the survey area. The slope is gradual from about 20 feet above sea level near the river to about 10 feet near the swamps, and the gradient is less than 1 percent.

This association makes up about 20 percent of the survey area. It is about 65 percent Commerce soils and about 15 percent Sharkey soils. Convent, Vacherie, and Mhoon soils make up the remaining 20 percent.

Commerce soils are at the highest elevations in the association. Their surface layer is dark grayish-brown silt loam, and the subsoil is grayish-brown, stratified silt loam and silty clay loam. The subsoil is mottled with shades of brown and gray. Commerce soils are somewhat poorly drained and have moderately slow permeability. The surface layer is medium acid to mildly alkaline, and the subsoil is neutral to moderately alkaline.

Sharkey soils occupy the slight depressions at the lowest elevations in this association. The surface layer is dark-gray clay. The subsoil is gray clay that is mottled with shades of brown. Sharkey soils are poorly drained and very slowly permeable. The surface layer is slightly acid to neutral, and the subsoil is neutral to moderately alkaline.

Most of this association has been cleared and is used for sugarcane. Practically all of the industrial and residential development in the survey is in this association. Most of the acreage is privately owned, but many large tracts have been bought by companies for industrial development. A small acreage is used for commercial vegetables.

Commerce soils are well suited to most cultivated crops and pasture plants grown in the survey area. The main limitation to use of these soils is wetness. Surface drainage is needed for optimum growth of most cultivated crops. Commerce soils have slight or moderate limitations for most urban, industrial, and recreational uses.

Sharkey soils are moderately well suited to most cultivated crops and are well suited to most pasture plants. They are difficult to work and can be worked within only a narrow range of moisture content without clodding when dry. The other main limitation is wetness. A surface drainage system is needed for most cultivated crops and pasture plants. Sharkey soils have severe limitations for most urban, industrial, and recreational uses because they are wet, have high shrink-swell potential, and have poor trafficability.

3. Sharkey association

Clayey soils

This association consists of clayey soils in a broad band between the natural levees and the low back swamps. The soils are level or depressional and are at elevations of 5 to 10 feet above sea level.

This association makes up about 11 percent of the survey area. It is about 62 percent Sharkey soils. The

remaining 38 percent is made up of Commerce, Tunica, Vacherie, and Mhoon soils.

Sharkey soils occupy the slight depressions at the lowest elevations in the association. They have a surface layer of dark-gray clay and a subsoil of gray clay mottled with shades of brown. They are poorly drained and very slowly permeable. The surface layer is slightly acid to neutral, and the subsoil is neutral to moderately alkaline.

Practically all of this association is cleared, and most of it is used for crops. A small acreage is in pasture and mixed hardwood forest. Most of the cultivated acreage is in sugarcane, but a small acreage is used for soybeans and rice.

Sharkey soils are moderately well suited to most cultivated crops and locally grown pasture plants. The main problems are wetness and poor tilth. Surface drainage is needed for most cultivated crops and pasture plants. Sharkey soils have severe limitations for most urban, industrial, and recreational uses because the soils are wet, have a high shrink-swell potential, and have poor trafficability.

4. Convent-Commerce-Sharkey association

Nearly level to gently undulating, loamy and clayey soils

This association consists of loamy and clayey soils that were formed after scouring and deposition that resulted from levee breaks along the Mississippi River. These soils occur on both sides of the river at the southern boundary of St. John the Baptist Parish and in the vicinity of Convent in St. James Parish. The association originally was a series of low parallel ridges and swales, but most of the area has been leveled to a gradient of less than 1 percent. Elevation ranges from about 5 feet to 15 feet above sea level.

This association makes up about 5 percent of the survey area. It is about 50 percent Convent soils, 20 percent Commerce soils, and 15 percent Sharkey soils. Convent soils, sandy variant, Vacherie soils, sandy variant, and Vacherie soils make up the remaining 15 percent.

Convent soils occupy the low ridges. Their surface layer is dark grayish-brown silt loam. The subsoil is grayish-brown, stratified silt loam and very fine sandy loam that is mottled with dark yellowish brown. Convent soils are somewhat poorly drained and moderately permeable. They have high natural fertility. They are medium acid to moderately alkaline in the surface layer and neutral to moderately alkaline in the underlying layers.

Commerce soils occupy the natural levees along the Mississippi River. Their surface layer is dark grayish-brown silt loam, and the subsoil is grayish-brown stratified silt loam and silty clay loam. The subsoil is mottled with shades of brown and gray. Commerce soils are somewhat poorly drained and moderately slowly permeable. The surface layer is medium acid to mildly alkaline, and the subsoil is neutral to moderately alkaline.

Sharkey soils occupy the slight depressions at the lowest elevations in the association. Their surface layer is dark-gray clay, and the subsoil is gray clay mottled with shades of brown. Sharkey soils are poorly drained and very slowly permeable. The surface layer is slightly acid to neutral, and the subsoil is neutral to moderately alkaline.

This association is practically all cleared. Most of it is used for cultivated crops, mainly sugarcane. A small acreage is used for pasture and commercial vegetables. Most of the land is privately owned.

The Convent and Commerce soils are well suited to most locally grown cultivated crops and pasture plants. The main limitation to farming is wetness. Surface drainage is needed for the optimum growth of most crops. These soils have few limitations for most urban, industrial, and recreational uses. Sharkey soils are moderately well suited to most cultivated crops and are well suited to pasture plants. The main limitations are wetness and poor tilth. Sharkey soils have severe limitations for most urban, industrial, and recreational uses. The main limitations for these uses are wetness, high shrink-swell potential, and poor trafficability.

5. Barbary-Sharkey association

Frequently flooded, clayey soils

This association consists of frequently flooded to nearly continuously flooded clayey soils. These soils occur in the very broad basins on both sides of the Mississippi River. Elevation ranges from about 1 to 5 feet above sea level.

This association makes up about 52 percent of the survey area. It is about 77 percent Barbary soils and 10 percent Sharkey soils. The remaining 13 percent is Maurepas and Allemands soils.

Barbary soils occupy the lowest elevations in the association. Their surface layer is very dark grayish-brown, soft muck over greenish-gray, semifluid clay. Sharkey soils are very slowly permeable and are covered with water most of the year. The surface layer is medium acid to moderately alkaline, and the underlying layers are neutral to moderately alkaline.

Sharkey soils occupy the highest areas in the association and typically adjoin the cultivated land. Their surface layer is dark-gray clay, and the subsoil is gray clay mottled with shades of brown. Sharkey soils are poorly drained and very slowly permeable. They are flooded frequently, but less often than Barbary soils. The surface layer is slightly acid to neutral, and the subsoil is neutral to moderately alkaline.

All of this association is woodland, dominantly water tupelo, baldcypress, and red maple.

This association is not suited to most cultivated crops or pasture plants. Frequent flooding is the main limitation to use for farming. Limitations for urban, industrial, and recreational uses are very severe because flooding is frequent, trafficability is poor, shrink-swell potential is high, and bearing capacity is low.

6. Maurepas association

Woody peat soils of the swamps

This association consists of soils formed in thick beds of woody plant remains. These soils occur in the low depressional swamps in the northeast tip of St. John the Baptist Parish. This tip separates Lake Maurepas and Lake Pontchartrain. The association is about 1 foot above sea level and is nearly continuously flooded.

This association makes up about 5 percent of the survey. It is about 95 percent Maurepas soil and about 5 percent Barbary soils.

Maurepas soils have a surface layer and underlying layers of dark-brown muck. The surface layer is strongly acid to neutral, and the underlying layers are medium acid to mildly alkaline. Partly decomposed logs and wood fragments occur throughout the soil. These soils are very poorly drained and nearly continuously flooded.

All of this association is in a sparse and diminishing stand of cypress.

This association is not suited to cultivated crops or pasture plants. The main limitation to use for farming is frequent flooding. The soils have very severe limitations for urban, industrial, and recreational uses because flooding is frequent, trafficability is poor, and bearing capacity is low. Subsidence and differential settling are major concerns in drained areas because there are numerous partly decomposed logs and stumps.

7. *Allemands-Carlin association*

Organic soils of the marshes

This association consists of the broad areas of frequently flooded soils of the marshland. These soils occur in the vicinity of Lakes Maurepas, Pontchartrain, and Des Allemands, in large areas about 1 foot above sea level. They have a thick peat and muck surface layer.

This association makes up about 3 percent of the survey area. It is about 60 percent Allemands soils and 40 percent Carlin soils.

Allemands soils occupy the highest elevations in the association. Their surface layer is very dark gray muck, and the subsoil is black muck. These soils are underlain with gray clay at a depth of 16 to 51 inches. The surface layer is strongly acid to slightly acid and grades to moderately alkaline in the lower layers. The water table is at the surface continuously.

Carlin soils occupy the lowest elevations in the association. Their surface layer is very dark grayish-brown peat, and the subsoil is very dark grayish-brown mucky peat. Because the surface layer floats on underlying water layers, the surface elevation fluctuates with the surrounding water level. The surface layer is strongly acid to neutral and grades to moderately alkaline in the lower layers.

All of this association is used for wildlife habitat.

These soils are not suited to cultivated crops, but Allemands soils are suited to limited grazing. Frequent flooding and poor trafficability are the main limitations to farming. Limitations for urban and industrial uses are very severe because flooding is frequent, trafficability is poor, and bearing capacity is low. Subsidence is a problem where the soils are protected and drained.

8. *Convent-Barbary association*

Frequently flooded, loamy and clayey soils

This association consists of a series of low parallel ridges and swales that are frequently flooded. The ridges are loamy and the swales are clayey. The association occurs in a broad, gently undulating area along the eastern border of St. John the Baptist Parish. Elevation ranges from about 1 to 5 feet above sea level.

This association makes up about 2 percent of the survey area. It is about 55 percent Convent soils and 30 percent Barbary soils. The remaining 15 percent is Commerce, Mhoon, Sharkey, and Convent soils. These minor soils are not flooded.

Convent soils occupy the low ridges. Their surface layer is dark grayish-brown silt loam, and the underlying layers are grayish-brown, stratified silt loam and very fine sandy loam that is mottled with dark yellowish brown. Convent soils are somewhat poorly drained and moderately permeable. They are high in natural fertility. They range from medium acid to mildly alkaline in the surface layer and from neutral to moderately alkaline in the underlying layers.

Barbary soils occupy the swales at the lowest elevations in the association. Their surface layer is very dark grayish-brown muck, and the subsoil is greenish-gray, semifluid clay. Barbary soils are very slowly permeable and ponded. The surface layer is medium acid to neutral, and the underlying layers are moderately alkaline.

All of this association is in mixed hardwoods and baldcypress.

Frequent flooding is the main limitation to use. Use is restricted to timber production and wildlife habitat.

Descriptions of the Soils

This section describes the soil series and mapping units in St. James and St. John the Baptist Parishes. Each soil series is described in considerable detail, and then, briefly, each mapping unit in that series. Unless it is specifically mentioned otherwise, it is to be assumed that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second, detailed and in technical terms, is for scientists, engineers, and others who need to make thorough and precise studies of soils.

The description of each mapping unit includes a discussion on its use for crops and pasture, woodland, and wildlife habitat. Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. The capability unit in which the mapping unit has been placed is designated in each mapping unit description.

The acreage and proportionate extent of each mapping unit are shown in table 1. The extent of the survey area is from the 1967 Conservation Needs Inventory for Louisiana. Many of the terms used in describing soils can be found in the Glossary at the end of this survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the "Soil Survey Manual" (*9*).

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Mapping unit	St. James Parish	St. John the Baptist Parish	Total	
	Acres	*Acres*	*Acres*	*Percent*
Allemands mucky peat		6, 298	6, 298	1. 8
Barbary association	72, 259	71, 712	143, 971	40. 7
Carlin peat		5, 453	5, 453	1. 5
Commerce silt loam	21, 652	12, 824	34, 476	9. 7
Commerce silty clay loam	8, 605	1, 882	10, 487	3. 0
Convent fine sandy loam, sandy variant	776	391	1, 167	. 3
Convent complex	3, 833	6, 258	10, 091	2. 8
Convent and Barbary soils, frequently flooded		4, 970	4, 970	1. 4
Convent soils and Silty alluvial land, frequently flooded	2, 417	1, 727	4, 144	1. 2
Maurepas association		10, 549	10, 549	3. 0
Mhoon silty clay loam	1, 787	2, 681	4, 468	1. 3
Sharkey silty clay loam	10, 126	3, 185	13, 311	3. 8
Sharkey clay	14, 445	7, 354	21, 799	6. 2
Sharkey association, frequently flooded	16, 159	4, 542	20, 701	5. 8
Tunica clay	1, 048	48	1, 096	. 3
Vacherie fine sandy loam, sandy variant	1, 774	28	1, 802	. 5
Vacherie silt loam	3, 619	1, 098	4, 717	1. 3
Water	7, 260	47, 271	54, 531	1. 54
Total	165, 760	188, 271	354, 031	100. 0

Allemands Series

This series consists of very poorly drained soils in broad, low marshes around Lakes Maurepas, Pontchartrain, and Des Allemands.

In a representative profile the surface layer is very dark gray mucky peat about 9 inches thick. Below this, to a depth of about 33 inches, is black mucky peat. The next layer, to a depth of about 50 inches, is dark-gray clay. Below this layer is dark greenish-gray fine sandy loam.

Representative profile of Allemands mucky peat, in St. John the Baptist Parish, 2 miles southeast of Lower Vacherie, 1¼ miles west from end of gravel road at Vacherie Canal, and 75 yards north of Vacherie Canal, sec. 37, T. 13 S., R. 18 E. Laboratory data (sample No. S68LA-48-7) in table 7:

Oe—0 to 9 inches, very dark gray (10YR 3/1) mucky peat, same color when pressed and rubbed; about 20 percent fibers after rubbing, dominantly herbaceous fibers; massive; nonsticky, nonplastic; many live roots; about 25 percent mineral content; medium acid; clear, smooth boundary.

Oa1—9 to 21 inches, black (10YR 2/1) mucky peat, same color when pressed and rubbed; about 5 percent fibers after rubbing, dominantly herbaceous fibers; massive; nonsticky, nonplastic; many live roots; about 30 percent mineral content; slightly acid; clear, smooth boundary.

Oa2—21 to 33 inches, black (10YR 2/1) mucky peat, same color when pressed and rubbed; about 1 percent fibers after rubbing, dominantly herbaceous fibers; massive; nonsticky, nonplastic; about 45 percent mineral content; neutral; clear, smooth boundary.

IIAbg—33 to 50 inches, dark-gray (FY 4/1) clay; massive; slightly sticky, slightly plastic; moderately alkaline; clear, smooth boundary.

IIICg—50 to 60 inches +, dark greenish-gray (FGY 4/1) fine sandy loam; massive; slightly sticky, slightly plastic; moderately alkaline.

The organic material ranges from 16 to 51 inches in thickness and is dominantly herbaceous plant remains. The mineral content ranges from 20 to 50 percent. Between depths of 0 an 12 inches, the organic material ranges from dark grayish brown (10YR 4/2) to black (N 2/0); the fiber content, after rubbing, ranges from one-tenth to more than four-tenths percent. Reaction is strongly acid to slightly acid. Between depths of 12 and 36 inches, the fiber content of the dominant layers ranges from 5 to 10 percent after rubbing; the organic material ranges from dark gray (10YR 4/1) to black (N 2/0). Reaction is medium acid to moderately alkaline. Between depths of 36 and 51 inches, the organic material, if present, has the same fiber and mineral content as that between depths of 12 and 36 inches. The IIAbg horizon is clay or mucky clay and is gray (10YR 5/1) to dark gray (5Y 4/1). The clay content ranges from 60 to 95 percent. Reaction is neutral to moderately alkaline. The IIICg horizon ranges from gray (5Y 5/1) to dark greenish gray (5GY 4/1) in color and from very fine sandy loam to clay in texture.

Allemands soils adjoin Carlin, Barbary, and Maurepas soils. They have thinner organic layers than Carlin soils and do not have a layer of free water within the profile, as is typical of those soils. Allemands soils have thinner organic layers than Maurepas soils. They have thicker organic layers than Barbary soils.

Allemands mucky peat (Am).—This level, very poorly drained soil occupies large, low areas near Lakes Maurepas, Pontchartrain, and Des Allemands. It is used as wildlife habitat. The vegetation is paille fine, cattail, common reed, bulrush, cutgrass, and other freshwater, herbaceous marsh plants (fig. 2). Carlin soils make up about 20 percent of each mapped area.

The surface layer of this Allemands soil is very dark gray mucky peat about 9 inches thick. It is underlain by black mucky peat. Layers of dark-gray to gray clay are 16 to 51 inches below the surface.

Natural fertility is high. Reaction is strongly acid to slightly acid in the surface layer and moderately alkaline in the underlying layers. The water table is at the surface continuously, and a few inches of water cover the surface for long periods. If drained, the soil consolidates, shrinks, and subsides; subsidence continues at a gradual rate until the organic material is oxidized. This soil also becomes more acid after drainage.

***Figure 2.*—Marsh vegetation on Allemands mucky peat.**

Frequent flooding and a high water table make this soil unsuited to cultivated crops and pasture plants. A drainage system is difficult to install because the organic material is unstable; if drains are installed, considerable maintenance is required because the soil material subsides. This soil is in capability unit VIIw–1.

If flooded, this soil provides roosting and feeding areas for ducks, geese, and other waterfowl. It also provides an excellent food supply for muskrats and nutria. Periodic burning when the root crowns of marsh plants are submerged increases food production and improves habitat. This soil is not well suited to intensive wildlife management because water-control structures are difficult to install and maintain.

This soil supports a dense growth of freshwater marsh grasses, sedges, and forbs. It is generally not suitable for commercial timber.

Barbary Series

The Barbary series consists of very poorly drained, flooded soils that have semifluid mineral layers. These soils occur in broad, low swamps on both sides of the Mississippi River. They are in interstream basins.

A representative soil has about 6 inches of very dark grayish-brown muck on the surface. The uppermost mineral layer is dark-gray, semifluid mucky clay about 6 inches thick. This layer is underlain by greenish-gray semifluid clay about 26 inches thick. The next layer is dark-gray, semifluid clay. It extends to a depth of 50 inches or more.

Representative profile of Barbary muck, in St. James Parish, 19 miles west of Laplace, 1.2 miles east of where U.S. Highway No. 61 crosses the St. James-Ascension Parish line, and 700 yards south of U.S. Highway No. 61, sec. 35, T. 10 S., R. 4 E.:

O2—6 inches to 0, very dark grayish-brown (10YR 3/2) muck; moderate, medium and fine, crumb structure; nonplastic and nonsticky; common wood fragments and partly decomposed Spanish moss; about 60 percent organic matter; slightly acid; gradual, wavy boundary.

A1g—0 to 6 inches, dark-gray (5Y 4/1), semifluid mucky clay; few, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, coarse, subangular blocky structure; slightly plastic and slightly sticky; flows easily between fingers and leaves hand empty; many roots and partly decomposed wood fragments; about 20 percent organic matter; neutral; clear, smooth boundary.

C1g—6 to 32 inches, greenish-gray (5GY 5/1) clay; slightly sticky and slightly plastic; massive; flows with slight difficulty between fingers when squeezed but leaves hand empty; about 5 percent organic matter; neutral; clear, smooth boundary.

C2g—32 to 50 inches +, dark-gray (5Y 4/1) semifluid clay; underlain by mat of logs and wood fragments at a depth of 50 inches; neutral.

The 0 horizon ranges from dark grayish brown (10YR 4/2) to very dark gray (10YR 3/1) in color, from medium acid to moderately alkaline in reaction, from 4 to 15 inches in thickness, and from muck to mucky clay in texture. The

A horizon ranges from dark gray (10YR 4/1) to gray (N 5/0) in color, from slightly acid through mildly alkaline in reaction, from 5 to 10 inches in thickness, and from mucky clay to clay. The C horizon ranges from dark gray (10YR 4/1) to greenish gray (5GY 5/1) and from clay to mucky clay. It is neutral to moderately alkaline. The organic-matter content in all horizons above a depth of 20 inches is more than 3 percent. The clay content between depths of 10 and 40 inches ranges from 60 to 90 percent. Material in all mineral layers to a depth of 50 inches or more flows between fingers when squeezed in hand.

Barbary soils adjoin Sharkey, Maurepas, and Allemands soils. They have a thinner organic layer than Maurepas and Allemands soils. In contrast with Sharkey soils, they contain semifluid, clayey layers.

Barbary association (Ba).—Barbary soils occupy broad depressional swamps on both sides of the Mississippi River. They are the most extensive soils in the survey area. They are level and almost continuously flooded. The surface layer is very dark grayish-brown muck about 6 inches thick. The next layer is dark-gray clay. In most places these soils are underlain by a layer of muck at a depth of about 50 to 60 inches. The muck contains many logs and stumps.

Included in mapping are areas of Maurepas and Sharkey soils that make up about 15 percent of the mapping unit. Also included is the narrow beach along the shores of Lake Pontchartrain and Lake Maurepas.

Natural fertility is high. The surface layer is medium acid to moderately alkaline, and the underlying layers are neutral to moderately alkaline. Permeability is very slow, and drainage is very poor. These soils are continuously saturated to the soil surface and are almost always flooded.

Barbary soils are not suited to cultivated crops or to pasture plants, because flooding is nearly continuous. An adequate system of levees, drainage ditches, and pumps that remove excess water is needed before the soils are suited to crops or pasture. If drained, these soils shrink irreversibly and deep cracks form. The cracks do not completely close when the soil is wet. These soils are in capability unit VIIw-2.

These soils are not well suited to intensive management for wildlife because water control structures are difficult to install. They do provide roosting areas and a limited supply of food for ducks and other waterfowl. They also provide a limited food supply for deer and squirrels and habitat suitable for mink, alligators, crawfish, and raccoons.

The entire acreage is wooded; dominant trees are baldcypress and water tupelo. The regeneration of these trees is generally only on rotting logs, stumps, and uplifts from fallen trees. Potential productivity is moderate. The estimated site index is 60 for water tupelo. Seedling mortality and equipment limitations are severe because of wetness and flooding. Special equipment is generally needed in forestry operations.

Carlin Series

The Carlin series consists of the very poorly drained organic soils that have a water layer below the surface layer. These soils occur in St. John the Baptist Parish in large areas around Lake Maurepas and Lac Des Allemands on the soft, floating marshes.

In a representative profile the surface layer is very dark grayish-brown peat about 12 inches thick. Below the surface layer is very dark grayish-brown mucky peat about 8 inches thick. The next layer, about 10 inches thick, is dominantly water on which the upper layers float. Underlying the water layer is a layer of very dark gray mucky peat about 30 inches thick. The next layer is greenish-gray, semifluid sandy clay loam. It extends to a depth of 72 inches or more.

Representative profile of Carlin peat, in St. John the Baptist Parish, 10 miles southeast of Vacherie, three-quarters of a mile north of outlet of Bayou Chevreuil into Lac Des Allemands, 1½ miles southeast from end of gravel road at canal, three-eighths of a mile southwest of Fausse Pointe, and 300 feet north of Lac Des Allemands, sec. 37, T. 13 S., R. 18 E.:

Oi1—0 to 6 inches, very dark grayish-brown (10YR 3/2) peat, black (10YR 2/1) when pressed and rubbed; about 75 percent fiber after rubbing, dominantly herbaceous fiber; massive; nonplastic and nonsticky; many roots; about 30 percent mineral content; slightly acid; clear, smooth boundary.

Oi2—6 to 12 inches, very dark grayish-brown (10YR 3/2) peat, very dark gray (10YR 3/1) when pressed and rubbed; about 70 percent fiber after rubbing, dominantly herbaceous fiber; massive; nonplastic and nonsticky; many roots; about 30 percent mineral content; slightly acid; clear, wavy boundary.

Oe1—12 to 20 inches, very dark grayish-brown (10YR 3/2) mucky peat, same color when pressed and rubbed; very dark gray (10YR 3/1) after exposure to air; about 30 percent fiber after rubbing, dominantly herbaceous fiber; massive; nonplastic and nonsticky; about 35 percent mineral content; neutral; clear, wavy boundary.

Oe2—20 to 30 inches, water and about 10 percent very dark grayish-brown (10YR 3/2) organic material suspended from horizon above; solids are about 30 percent fiber after rubbing; massive; nonplastic and nonsticky; thickness of layer changes as surface water level changes; neutral; clear, wavy boundary; boundary discontinuous when water level is low.

Oe3—30 to 60 inches, very dark gray (10YR 3/1) mucky peat, same color when pressed and rubbed; about 15 percent fiber after rubbing, dominantly herbaceous fiber; massive; nonplastic and nonsticky; about 40 percent mineral content; columns extend 8 inches into Oe2 horizon and support the Oe1 layer when water level is low; mildly alkaline.

IIAbg—60 to 72 inches +, greenish-gray (5GY 5/1) sandy clay loam; massive; slightly plastic; flows easily between fingers when squeezed, leaving hand empty; semifluid; moderately alkaline.

Organic layers have a combined thickness of more than 51 inches and a weighted average mineral content ranging from 15 to 45 percent. The organic material is mainly herbaceous plant remains. The layers between depths of 0 to 12 inches have a fiber content that is more than two-thirds the volume of organic material in the unrubbed state and more than four-tenths in the rubbed state. These layers range from brown (10YR 5/3) to black (N 2/0) and from strongly acid to neutral. The layers between depths of 12 to 36 inches have a fiber content that is one-tenth to four-tenths the volume of organic material in the rubbed state. These layers range from dark grayish brown (10YR 4/2) to black (N 2/0) and from medium acid to moderately alkaline. This 12- to 36-inch zone contains a layer of water that ranges from 6 to 24 inches in thickness. The 36- to 51-inch zone generally has the same ranges as the zone above, but in some places it contains thin layers that are less than one-tenth or more than four-tenths fiber content. The IIAbg horizon ranges from gray (10YR 5/1) to dark greenish gray (5GY 4/1) in color and from fine sand to clay in texture. Reaction is neutral to moderately alkaline.

Carlin soils adjoin the Allemands soils. They have thicker,

less decomposed organic layers than those soils. They are less decomposed than the Maurepas soils and consist mainly of herbaceous rather than woody fiber.

Carlin peat (Ca).—This is a level, very poorly drained peat soil that occurs in large areas in the "floating" marshes adjacent to Lac Des Allemands and Lake Pontchartrain. The surface layer is a very dark grayish-brown peat about 12 inches thick. The next layer is very dark grayish-brown mucky peat. The fibrous peat surface layer floats on a layer of water. Thickness of water layers varies with the water level in adjacent bodies of water, and a fluctuating surface elevation is the result.

Included in mapping are areas of Allemands soils that make up to about 20 percent of the mapping unit.

This Carlin soil is strongly acid to neutral in the surface layer and grades to moderately alkaline in the lower layers. Permeability is rapid, but there is little movement of air because the water table is high. There is no internal drainage, and runoff is very slow.

This soil is not suited to cultivated crops or pasture plants because flooding is frequent, the water table is high, and trafficability (fig. 3) is poor. Subsidence and increased acidity occur when this soil is drained. Dikes and drainage ditches are extremely difficult to construct and maintain because the organic material is not stable. This soil is in capability unit VIIIw-1.

This soil provides roosting areas and a limited food supply for ducks, geese, and other waterfowl. It also provides an excellent habitat for muskrats, nutria, and alligators. It is not well suited to intensive wildlife management, because water-control structures are difficult to construct. Periodic burning when root crowns are submerged increases production of the marsh plants used for food.

This soil supports a dense growth of freshwater marsh grasses, sedges, and forbs. It is not suited to commercial timber.

Commerce Series

The Commerce series consists of somewhat poorly drained soils that have moderately slow permeability. These soils are level to nearly level and occupy high local elevations on the natural levees of the Mississippi River and its distributaries.

In a representative profile the surface layer is silt loam about 12 inches thick. It is dark grayish brown in the upper part and dark gray in the lower part. Below the surface layer, to a depth of about 32 inches, are layers of grayish-brown and gray silt loam and silty clay loam. The underlying material is grayish-brown silty clay loam to a depth of 52 inches.

Representative profile of Commerce silt loam, in St. James Parish, 1½ miles west of town of St. James, 1 mile west of Louisiana Highway No. 18, and 30 feet west of headland, sec. 9, T. 12 S., R. 16 E.:

Ap1—0 to 8 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; common cane roots and partly decomposed cane residue; neutral; abrupt, wavy boundary.

Ap2—8 to 12 inches, dark-gray (10YR 4/1) silt loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, thick platy structure; very firm; common roots along horizontal cleavage planes; horizontal ped faces nearly completely coated with dark-brown stains; mildly alkaline; gradual, smooth boundary.

B21—12 to 16 inches, grayish-brown (10YR 5/2) silty clay loam; common, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, coarse, subangular blocky structure; firm; few, thin, patchy, dark-gray clay films on vertical faces and in pores; mildly alkaline; gradual, smooth boundary.

B22—16 to 26 inches, grayish-brown (10YR 5/2) heavy silt loam; common, fine, distinct, dark yellowish-brown (10YR 4/4) and yellowish-brown (10YR 5/6) mottles; weak, medium, subangular blocky structure; friable; few dark-gray clay films in channels and in pores; few light brownish-gray silt coatings on vertical faces; moderately alkaline; gradual, smooth boundary.

B3—26 to 32 inches, gray (10YR 5/1) heavy silty clay loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, coarse, subangular blocky structure; plastic, sticky; few, thin, patchy clay films on vertical ped faces and in pores; moderately alkaline; clear, smooth boundary.

C1—32 to 52 inches, grayish-brown (10YR 5/2) light silty clay loam; common, medium, faint, gray (10YR 5/1) and dark yellowish-brown (10YR 4/4) mottles; massive; plastic, slightly sticky; moderately alkaline.

C2—52 to 80 inches, grayish-brown (10YR 5/2) fine sandy loam; common, medium, faint, gray (10YR 5/1) and dark yellowish-brown (10YR 4/4) mottles; massive; very friable; moderately alkaline; slightly effervescent.

The A horizon is dark gray (10YR 4/1) or dark grayish brown (10YR 4/2) in color, ranges from 6 to 15 inches in thickness, and ranges from medium acid to mildly alkaline in reaction. The A horizon is silt loam or silty clay loam. The B horizon is stratified silt loam and silty clay loam or is silty clay loam throughout. In some places, lenses of clay that have an aggregate thickness of 5 inches or less occur in the B horizon. The upper part of the B horizon ranges from dark grayish brown (10YR 4/2) to grayish brown (2.5YR 5/2); the lower part of the B horizon ranges from dark grayish brown (10YR 4/2) to gray (5Y 5/1). Mottles are fine to medium and range from dark brown to yellowish brown. Reaction of the B horizon ranges from neutral through moderately alkaline. The C horizon is fine sandy loam, very fine sandy loam, silt loam, or silty clay loam.

Commerce soils commonly adjoin the Sharkey, Convent, Vacherie, and Mhoon soils. They are better drained than the Sharkey and Mhoon soils and are less clayey than Sharkey soils. They have more clay and are more strongly developed than Convent soils. They are similar to Vacherie soils but have a less clayey lower subsoil.

Commerce silt loam (Cm).—This nearly level, somewhat poorly drained soil occupies large elongated areas on the natural levees of the Mississippi River and its distributaries throughout the survey area.

This soil has the profile described as representative for the series. The surface layer is dark grayish-brown silt loam 6 to 15 inches thick. The subsoil is stratified grayish-brown silty clay loam and silt loam that has gray and brownish mottles.

Included with this soil in mapping is about 300 acres of acid soils that have well-developed profiles, a few areas where slopes are 1 to 3 percent, and small areas of Convent, Vacherie, Mhoon, and Sharkey soils.

Natural fertility is high. The content of phosphorus and potassium is high, and nitrogen content is low. The reaction is medium acid to mildly alkaline in the surface layer and is neutral to moderately alkaline in the subsoil. Runoff is slow, and permeability is moderately slow. Internal drainage is slow. The available water capacity is very high. The water table is within a depth of 20

Figure 3.—**Floating vegetation on Carlin peat.**

inches during wet periods. A few areas are flooded for 2 to 3 days following heavy local rains.

This soil is well suited to cultivated crops and pasture plants. Most of the cultivated acreage is planted to sugarcane. A small acreage, mainly in the central and southern parts of the survey area, is planted to truck crops. Practically all of the Perique tobacco is grown on this soil. Suitable crops include sugarcane, corn, oats, soybeans, and all commonly grown truck crops. Among the suitable pasture plants are common bermudagrass, dallisgrass, Pensacola bahiagrass, johnsongrass, ryegrass, and white clover. Hay can generally be harvested from pasture during periods of peak growth.

This soil is friable and fairly easy to keep in good tilth. Traffic pans develop easily, but they can be broken by chiseling or deep plowing. A surface drainage system is needed for most cultivated crops. Land grading or smoothing improves surface drainage and increases the efficiency of farm equipment. Crop response to nitrogen fertilizer is good. This soil is in capability unit IIw–3.

Most of the acreage is cleared. It can be managed for quail, rabbits, and doves. Browntop millet grows well and provides good food for doves. Well-suited crops that provide food for quail are shrub lespedeza, browntop millet, partridge peas, soybeans, and tickclover. The areas that adjoin large wooded areas can be managed for deer. Well-suited crops that provide food for deer and rabbits include grasses, clover, wheat, rye, and vetch. Fishponds and crawfish and duck fields can be established in most areas.

Only small areas are wooded. The principal species are green ash, cottonwood, sweetgum, sycamore, water oak, American elm, hackberry, pecan, and Nuttall oak. Suitable species for commercial planting are green ash, sycamore, cottonwood, Nuttall oak, water oak, and sweetgum. Potential productivity is very high. The site index is 120 for cottonwood, 110 for water oak, and 90 for Nuttall oak. Seedling mortality is slight. Equipment limitation is moderate because this soil is somewhat poorly drained.

Commerce silty clay loam (Cn).—This somewhat poorly drained soil is on natural levees. It is in large, irregularly shaped depressions or level areas.

This soil is similar to that described as representative for the series, but the surface layer is dark grayish-brown or dark-gray silty clay loam 6 to 15 inches thick. The subsoil has layers of grayish-brown silty clay loam and silt loam that are mottled with shades of brown, yellow, and gray.

Included with this soil in mapping are a few areas of Mhoon and Sharkey soils and small areas of Commerce silt loam.

Natural fertility is high. The content of phosphorus and potassium is high and that of nitrogen is low. The reaction is medium acid to mildly alkaline in the surface layer and is neutral to moderately alkaline in the subsoil. Runoff is slow to very slow, and permeability is moderately slow. Internal drainage is slow, and the available water capacity is very high. The water table is within a depth of 15 inches during wet periods. Water remains in the depressions and on the lower level areas for several days after heavy local rains.

Practically all the acreage is cleared and used for cultivated crops. This soil is moderately well suited or well suited to cultivated crops and is well suited to pasture plants. Most of the cultivated areas are planted to sugarcane. Some truck crops are grown. Suitable crops include sugarcane, corn, soybeans, and most locally grown truck crops. Among the suitable pasture plants are bermudagrass, Pensacola bahiagrass, dallisgrass, johnsongrass, tall fescue, ryegrass, and white clover. Hay can generally be harvested from pastures during periods of peak growth.

Good tilth is somewhat difficult to maintain because of the silty clay loam surface layer. This soil can be worked within only a fairly narrow range of moisture content. It tends to become cloddy when dry. The moderately high clay content in the surface layer restricts the use of sugarcane harvesting equipment during wet periods. The water table may restrict root development of some deep-rooted plants. Drainage is needed to remove excess surface water. Land grading or smoothing improves surface drainage and increases the efficiency of farm equipment. Crops respond well to nitrogen fertilizer. This soil is in capability unit IIw-1.

This soil can be managed for quail, rabbits, and doves. Most of the area is cleared and used for cultivated crops. Browntop millet is well suited and provides food for doves. Well-suited crops that provide food for quail include shrub lespedeza, browntop millet, partridge peas, soybeans, and tickclover. Areas that adjoin large wooded areas can be managed for deer. Well-suited crops that provide food for deer and rabbit include grasses, clovers, wheat, rye, and vetch. Fishponds and crawfish and duck fields can be established.

Only small areas are wooded. The principal species are green ash, cottonwood, sweetgum, sycamore, water oak, American elm, hackberry, pecan, and Nuttall oak. Suitable species for commercial planting are green ash, sycamore, cottonwood, Nuttall oak, water oak, and sweetgum. Potential productivity is very high. The site index is 120 for cottonwood, 110 for water oak, and 90 for Nuttall oak. Seedling mortality is slight. Equipment limitation is moderate because this soil is somewhat poorly drained.

Convent Series, Sandy Variant

Convent series, sandy variant, consists of somewhat poorly drained, moderately permeable soils. These soils are nearly level and are on undulating ridges along the natural levees on both sides of the Mississippi River.

In a representative profile the surface layer is about 10 inches thick. It is dark grayish-brown fine sandy loam in the upper part and grayish-brown very fine sandy loam in the lower part. The underlying layers are grayish-brown, stratified loamy very fine sand, fine sandy loam, and very fine sandy loam that extend to a depth of about 58 inches.

Representative profile of Convent fine sandy loam, sandy variant, in St. John the Baptist Parish, three-eighths of a mile southwest of Lucy Post Office, 75 feet east-southeast of a pecan tree, and 30 feet west of distributary bayou; sec. 6, T. 12 S., R. 7 E.:

Ap1—0 to 6 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, medium and fine, subangular blocky structure; very friable; many roots; mildly alkaline; clear, smooth boundary.

Ap2—6 to 10 inches, grayish-brown (10YR 5/2) very fine sandy loam; few, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, medium and thick, platy structure; friable; common roots; delayed effervescence when treated with cold hydrochloric acid; moderately alkaline; clear, smooth boundary.

C1—10 to 22 inches, grayish-brown (10YR 5/2) loamy very fine sand; few, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, medium, platy structure; loose to very friable; delayed effervescence when treated with cold hydrochloric acid; few, thin, alternating grayish-brown and dark yellowish-brown, horizontal bands; moderately alkaline; gradual, smooth boundary.

C2—22 to 34 inches, grayish-brown (10YR 5/2) fine sandy loam; few, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, medium, subangular blocky structure; very friable; delayed effervescence when treated with cold hydrochloric acid; moderately alkaline; gradual, smooth boundary.

C3—34 to 58 inches, grayish-brown (2.5Y 5/2) very fine sandy loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, medium, subangular blocky structure; very friable; very few, soft, black concretions; strongly effervescent; moderately alkaline.

The A horizon ranges from grayish brown (10YR 5/2) to dark gray (10YR 4/1) in color, from 6 to 15 inches in thickness, and from medium acid to moderately alkaline in reaction. The C horizon is grayish brown (10YR 5/2) through dark grayish brown (10YR 4/2) and neutral through moderately alkaline. Mottles are fine or medium and range from brown to dark yellowish brown. The C horizon is very fine sandy loam, loamy very fine sand, fine sandy loam, or silt loam. Weighted average clay content is 5 to 10 percent. The

soil is 15 to 25 percent sand coarser than very fine sand between depths of 10 and 40 inches.

Convent sandy variant soils are adjacent to the Vacherie sandy variant soils and to Commerce soils and other Convent soils. They have more sand and less clay in the lower layers than the Vacherie sandy variant soils and more sand throughout than Commerce and other Convent soils.

Convent fine sandy loam, sandy variant (Co).—This nearly level, somewhat poorly drained soil is on low, elongated, slightly undulating to level ridges. These ridges formed in sediments deposited as the result of breaks in the Mississippi River levee. Most of the acreage occurs as fairly large areas in the central and eastern parts of the survey area.

The surface layer is very friable, dark grayish-brown fine sandy loam 6 to 15 inches thick. The underlying layers are stratified, grayish-brown loamy very fine sand, fine sandy loam, and very fine sandy loam mottled with dark yellowish brown.

Included with this soil in mapping are several large areas that have slopes of 1 to 3 percent and small areas of the Vacherie sandy variant and of Convent, Commerce, and Sharkey soils.

Natural fertility is moderately high, but nitrogen content is low. The reaction is medium acid to mildly alkaline in the surface layer and neutral to moderately alkaline in the underlying layers. Runoff is medium and permeability is moderate. This soil has a water table at a depth of 30 inches during wet periods. The available water capacity is high.

This soil is well suited to most cultivated crops and pasture plants. Practically all the cultivated acreage is planted to sugarcane. Suitable pasture plants include common bermudagrass, dallisgrass, Pensacola bahiagrass, johnsongrass, and white clover.

This soil is very friable and easy to keep in good tilth. Young truck crops are damaged when heavy rains wash the loose surface soil away from the roots. Surface drainage is needed to remove excess surface water. Grading or smoothing this soil improves surface drainage and increases the efficiency of farm equipment. Crops respond well to nitrogen fertilizer. This soil is in capability unit IIw-3.

Most of the acreage is cleared. It can be managed for doves, quail, and rabbits. The areas adjoining large wooded areas can also be managed for deer. Browntop millet grows well and provides food for doves. Crops that provide food for quail are browntop millet, partridge peas, soybeans, and tickclover. Most all locally grown grasses and clovers provide food for rabbits. Well-suited crops that provide food for deer include vetch, wheat, and the commonly grown grasses and clovers. Constructing fishponds and crawfish and duck fields is difficult because seepage is excessive.

Practically all wooded areas are small and scattered. The main trees are green ash, cottonwood, water oak, sweetgum, sycamore, American elm, hackberry, and pecan. Trees suitable for commercial planting are green ash, sycamore, cottonwood, and sweetgum. Potential productivity is very high. The site index is 120 for cottonwood and 110 for sweetgum. Seedling mortality is slight. Equipment limitation is moderate because this soil is somewhat poorly drained.

Convent Series

The Convent series consists of somewhat poorly drained, moderately permeable soils. These soils are along the natural levees at the highest local elevations on both sides of the Mississippi River.

In a representative profile the surface layer is dark grayish-brown silt loam about 14 inches thick. The next layer is grayish-brown, stratified very fine sandy loam and silt loam that extends to a depth of about 51 inches. Below this is gray clay.

Representative profile of Convent silt loam, in St. John the Baptist Parish, 1 mile west of Lucy Post Office, 0.2 mile west of main farm road, and 65 feet south of headland, sec. 8, T. 12 S., R. 19 E.:

Ap1—0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; weak, medium, subangular blocky structure and weak, fine, granular structure; very friable; common roots; mildly alkaline; abrupt, smooth boundary.

Ap2—6 to 14 inches, dark grayish-brown (10YR 4/2) silt loam; weak, thick, platy structure and weak, coarse, subangular blocky structure; slightly firm; common roots; mildly alkaline; abrupt, smooth boundary.

C1—14 to 24 inches, grayish-brown (10YR 5/2) very fine sandy loam; few, medium, faint, yellowish-brown (10YR 5/6) mottles and few, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, thick, platy structure; very friable; few roots; faint, grayish-brown, thin, alternating bands of yellowish brown and dark yellowish brown; mildly alkaline; abrupt, smooth boundary.

C2—24 to 29 inches, grayish-brown (10YR 5/2) silt loam; common, fine and medium, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, thick, platy structure; friable; few roots; common pores; faint bands of very fine sandy loam up to one-quarter inch thick; moderately alkaline; strongly effervescent; abrupt, smooth boundary.

C3—29 to 51 inches, grayish-brown (10YR 5/2) very fine sandy loam; many, common, medium, faint, brown (10YR 5/3) mottles; weak, thick, platy structure; very friable; thin dark yellowish-brown and yellowish-brown bands in lower part; moderately alkaline; abrupt, smooth boundary.

IIC4—51 to 65 inches, gray (10YR 5/1) clay; many, medium and coarse, distinct, dark reddish-brown (5YR 3/4) mottles; massive; plastic and sticky; few roots; few pores; moderately alkaline.

The A horizon ranges from grayish brown (10YR 5/2) through dark grayish brown (10YR 4/2) in color, from 6 to 15 inches in thickness, and from medium acid to moderately alkaline in reaction. The C horizon ranges from grayish brown (2.5Y 5/2) to dark grayish brown (10YR 4/2) in color and from neutral to moderately alkaline in reaction. In some profiles a few gray mottles occur below a depth of 15 inches; the number increases with increasing depth. The C horizon is stratified silt loam and very fine sandy loam to a depth of 40 inches or more. In some places the C horizon contains strata of silty clay loam that have an aggregate thickness of 5 inches or less. The C horizon to a depth of 40 inches or more is 10 to 18 percent clay and 6 to 12 percent sand coarser than very fine sand.

Convent soils are adjacent to the Commerce, Vacherie, Sharkey, and Convent sandy variant soils. They have a lower clay content than the Commerce and Sharkey soils and lack the B horizon that is typical of those soils. They are less clayey in the lower horizons than the Vacherie soils. Convent soils have a lower sand content than the Convent sandy variant.

Convent complex (Cr).—This mapping unit consists of nearly level somewhat poorly drained soils that occur in an intricate pattern at the highest local elevations. It occurs as scattered areas throughout the two parishes.

Some areas on the east and north side of the Mississippi River are the result of deposition after levee breaks. Most of the acreage is used for cultivated crops, roads, or building sites.

Convent soils make up about 70 percent of this mapping unit. Intermingled with them are very small areas of similar soils that are calcareous. The surface layer of Convent soils is dark grayish-brown, very friable silt loam 6 to 14 inches thick. The underlying layers are grayish-brown silt loam and very fine loam mottled with yellowish brown.

Included with these soils in mapping are areas where slopes are 1 to 3 percent and a few small areas of Commerce, Vacherie, and Sharkey soils.

Natural fertility is high. The content of phosphorus and potassium is high, and nitrogen content is low. The reaction is medium acid to mildly alkaline in the surface layer and neutral to moderately alkaline in the underlying layers. Runoff is slow to medium, and permeability is moderate. The water table is within a depth of 25 inches for short, wet periods. Following heavy rains, water stands in the depressions for short periods. The available water capacity is very high.

These soils are well suited to cultivated crops and pasture plants. Most of the cultivated areas are planted to sugarcane. Some truck crops are grown. Suitable crops include sugarcane, corn, oats, soybeans, and truck crops. Suitable pasture plants include common bermudagrass, dallisgrass, Pensacola bahiagrass, johnsongrass, and white clover. Hay generally can be harvested from pastures during periods of peak growth.

The soils are friable and fairly easy to keep in good tilth. In places young truck crops are damaged when heavy rains wash the surface soil away from their roots. Trafficpans develop easily in cultivated areas, but the pans can be broken by chiseling or deep plowing. Drainage is needed in some areas to remove excess surface water. Land grading or smoothing improves surface drainage and increases the efficiency of farm equipment. Crops respond well to nitrogen fertilizer. These soils are in capability unit IIw–3.

These soils can be managed for quail, rabbits, and doves. Browntop millet grows well and provides excellent food for doves. Well-suited crops that provide food for quail include shrub lespedeza, browntop millet, partridge peas, soybeans, and tickclover. Duck and crawfish fields and fishponds are unsatisfactory in places because seepage is excessive.

Only a small acreage is wooded. Existing stands consist of cottonwood, sweetgum, green ash, sycamore, American and slippery elms, hackberry, water oak, pecan, and black willow. Trees suitable for planting are green ash, sycamore, cottonwood, and sweetgum. Potential productivity is very high. The site index is 120 for cottonwood and 110 for sweetgum. Seedling mortality and erosion hazard present no special management problems, but equipment limitations are moderate because these soils are somewhat poorly drained.

Convent and Barbary soils, frequently flooded (Cs).—These soils are gently undulating. They occupy a series of low parallel ridges and swales in a broad area along the eastern border of St. John the Baptist Parish.

The moderately permeable Convent soils make up about 55 percent of the mapping unit, and the very slowly permeable Barbary soils make up about 30 percent. The remaining 15 percent is included soils.

The Convent soil occupies the narrow convex ridges. The gradient is 0 to 3 percent. The ridges are several hundred feet wide in the southwestern part of the mapped area but are narrower and lower near Lake Pontchartrain. They are occasionally flooded for short periods. The surface layer is dark grayish-brown silt loam 6 to 15 inches thick. The underlying layers are stratified, grayish-brown silt loam and very fine sandy loam that has brownish mottles.

The Barbary soil occupies swales that are almost continuously flooded. These swales are narrow in the southwestern part of the survey area and are wide near Lake Pontchartrain. The surface layer of the Barbary soil is very dark grayish brown and mucky. It is underlain by greenish-gray semifluid clay.

Included with these soils in mapping are a few ridges above elevations that are flooded. Also included are small areas of Commerce, Mhoon, and Sharkey soils.

Water stands in the low swales most of the time. The content of phosphorus and potassium is high. Nitrogen content is low in the Convent soil and high in the Barbary soil.

Cultivated crops and pasture plants are not suited because the Barbary soil is frequently flooded. They are well suited in areas that have been leveled and protected from flooding by a system of pumps and levees. These soils are in capability unit Vw–1.

This mapping unit can be managed for rabbits, quail, deer, and squirrels. Timber harvest and plantings of tender grasses and clover on the higher Convent soils furnish a good supply of food for rabbits and deer. Quail are attracted where areas one-fourth to one-half acre have been cleared and planted to such adapted crops as browntop millet, partridge peas, tickclover, and soybeans. Forestry practices that favor oak, pecan, and other mast-producing trees increase the squirrel population.

All the acreage is in hardwoods. The principal trees are baldcypress, green ash, black willow, sycamore, water tupelo, hackberry, pecan, and American elm. Trees suitable for commercial plantings are sycamore, green ash, cottonwood, and sweetgum. Potential productivity is very high on the Convent soil and moderate on the Barbary soil. The site index on the Convent soils is 120 for cottonwood and 110 for sweetgum. Estimated site index on the Barbary soils is 60 for water tupelo. Seedling mortality is slight on the Convent soil and severe on the Barbary soil. Equipment limitations are severe because flooding is frequent and trafficability is poor in the swales.

Convent soils and Silty alluvial land, frequently flooded (Ct).—These gently undulating, frequently flooded silty soils occur on both sides of the Mississippi River in a narrow band 37 miles long between the river and the levees.

The proportions of the Convent soils and Silty alluvial land vary from place to place. Convent soils make up about 50 percent of the total acreage, and Silty alluvial land makes up about 35 percent.

Convent soils are on narrow, slightly convex ridges and have slopes of 0 to 3 percent. They are moderately permeable. In most places their surface layer is dark

grayish-brown silt loam 6 to 15 inches thick. Underlying layers are grayish-brown, stratified silt loam and very fine sandy loam. The profile of these soils is similar to that described as representative for the series, but the surface layer ranges from fine sandy loam to clay loam.

The moderately slowly permeable Silty alluvial land is on the lower ridges and in the swales. Slopes are 0 to 3 percent. The surface layer is dark grayish-brown silt loam or silty clay loam 6 to 12 inches thick. The subsoil is stratified, grayish-brown silt loam and silty clay loam faintly mottled with yellowish brown and gray.

Included with these soils in mapping are areas of Sharkey and Commerce soils that make up about 10 percent of the mapping unit. Also included are a few areas above elevations that are flooded.

Most of the acreage is frequently flooded and subject to scouring and deposition by the Mississippi River. The content of phosphorus and potassium is high, and the nitrogen content is low.

These soils are not suited to cultivated crops. About 70 percent of the acreage is woodland, and most of the rest is used for limited grazing, borrow areas, and garbage dumps. A few of the included higher areas are in sugarcane or home gardens. Suitable pasture plants include common bermudagrass, Pensacola bahiagrass, dallisgrass, and white clover. Frequent flooding by moving water and the resulting scouring and deposition are the major limitations to use for pasture. These soils are in capability unit Vw–2.

This mapping unit is suited to management for swamp rabbits and quail, and to a limited extent for squirrels. Cover and a good food supply for swamp rabbits can be provided by harvesting timber and clearing small areas and planting them to bermudagrass, dallisgrass, white clover, and other adapted grasses. Clearings one-fourth to one-half acre in size that are planted to browntop millet, partridge peas, tickclover, soybeans, and other adapted crops provide a good source of food for quail. Squirrels benefit from forestry practices that favor mast-producing trees.

Most of the acreage is in hardwoods. In the existing stands are such trees as sweetgum, green ash, cottonwood, American elm, water oak, hackberry, pecan, sycamore, and black willow. Trees suitable for commercial planting are green ash, sycamore, cottonwood, and sweetgum. Potential productivity is very high. The site index is 120 for cottonwood and 110 for sweetgum. Seedling mortality ranges from slight to severe, depending on the severity of flooding and the degree of scouring and deposition by floodwater. Equipment limitations range from moderate to severe, depending on the frequency of flooding.

Maurepas Series

The Maurepas series consists of very poorly drained mucky soils. These soils occur as large areas in basins in the northern tip of St. John the Baptist Parish.

In a representative profile layers of dark-brown muck consisting of woody organic material extend to a depth of about 30 inches. Below this, to a depth of 72 inches, is very dark grayish-brown muck. Layers of logs and wood are typical at a depth of about 30 inches.

Representative profile of Maurepas muck, in St. John the Baptist Parish, 15 miles north of Laplace. 200 feet east of Illinois Central Railroad, sec. 28, T. 9 S. R. 8 E.:

Oa1—0 to 8 inches, muck that is dark brown (7.5YR 3/2) when pressed or rubbed, very dark gray (10YR 3/1) after exposure to air; about 30 percent fiber, about 3 percent after rubbing; weak, medium, granular structure; nonplastic and nonsticky; flows easily between fingers when squeezed and leaves small ball of fiber in hand; about 55 percent of fiber is herbaceous, the rest woody; about 40 percent mineral; common wood fragments; neutral; clear, smooth boundary.

Oa2—8 to 20 inches, muck that is dark brown (7.5YR 3/2) when pressed or rubbed, very dark gray (10YR 3/1) after exposure to air; about 30 percent fiber, about 2 percent after rubbing; weak, medium, granular structure; nonplastic and nonsticky; flows easily between fingers when squeezed and leaves hand empty; about 60 percent of fiber is woody, the rest herbaceous; about 30 percent mineral; common wood fragments; moderately alkaline; clear, smooth boundary.

Oa3—20 to 30 inches, muck that is dark brown (7.5YR 3/2) when pressed or rubbed, very dark grayish brown (10YR 3/2) after exposure to air; about 30 percent fiber, less than 1 percent after rubbing; massive; nonplastic and nonsticky; flows easily between fingers when squeezed and leaves hand empty; about 60 percent of fiber is woody, the rest herbaceous; about 20 percent mineral; common logs and wood fragments; moderately alkaline; clear, smooth boundary.

Oa4—30 to 72 inches, muck that is very dark grayish brown (10YR 3/2) when pressed or rubbed; about 10 percent fiber, less than 1 percent after rubbing; massive; nonplastic and nonsticky; flows easily between fingers when squeezed and leaves hand empty; about 80 percent of fiber is woody, the rest herbaceous; about 20 percent mineral; layers of wood and logs at a depth of 30 inches; 3-inch layer of semifluid gray clay at a depth of 60 inches; moderately alkaline.

The organic material is more than 51 inches thick and consists mainly of woody plant remains. Wood fragments occur throughout the organic material. The fiber content to a depth of 12 inches ranges from about 0.1 to more than 0.4 of the volume of organic material after rubbing. This zone ranges from dark reddish brown (5YR 3/2) to black (10YR 2/1) and from strongly acid to neutral. The fiber content of the dominant layers between depths of 12 to 36 inches ranges from 5 to 10 percent of the volume of organic material. The layers in this zone range from dark reddish brown (5YR 3/2) to black (10YR 2/1) in color, from medium acid to mildly alkaline in reaction, and from 15 to 45 percent in mineral content. Between depths of 36 and 51 inches, the color, reaction, and mineral content have the same ranges as in the 12- to 36-inch zone, but thin layers having a higher mineral content are present in some pedons. Semifluid, gray to greenish-gray clayey horizons are common in the lower part of the Oa4 horizon.

Maurepas soils adjoin Barbary and Allemands soils. They have thicker organic layers than the Barbary and Allemands soils. They lack the water layers of the Carlin soils.

Maurepas association (Ma).—Nearly 85 percent of this association is a level Maurepas soil in an almost continuously flooded swamp. Elevation is about 1 foot above sea level. This soil occurs in a large area in the northeastern tip of St. John the Baptist Parish. This tip is between Lake Pontchartrain and Lake Maurepas. The surface layer of this soil is a dark-brown muck about 8 inches thick. The underlying layers are dark-brown or very dark grayish brown muck. Numerous partly decomposed logs, stumps, and wood fragments occur throughout the profile.

Included in mapping were areas of Barbary soils that make up about 5 percent of the association. Also included is the narrow beach along the western edge of Lake Pontchartrain.

The surface layer of the Maurepas soil is strongly acid to neutral, and the underlying layers are neutral to mildly alkaline. This soil is very poorly drained. In most places it does not support people walking. If it is drained, it consolidates, shrinks, and subsides. Subsidence continues at a gradual rate until the organic material is oxidized. All of this soil is in a sparse and diminishing stand of cypress trees.

This soil is not suited to cultivated crops or pasture plants because it is almost continuously flooded and is too soft for grazing livestock. Drainage systems are extremely difficult to install and maintain because the organic material is unstable. This soil is in capability unit VIIIw-1.

This mapping unit is not suited to intensive wildlife management because water control structures are difficult to construct. It provides roosting areas and a limited food supply for ducks and other waterfowl, and it is an excellent habitat for muskrats, nutria, and alligators. Food for ducks is increased and feeding conditions are improved by burning periodically when water covers the root crowns of marsh plants.

This association is not suitable for the production of major commercial wood products. The only trees that grow are scattered baldcypress (fig. 4). Little or no regeneration is presently taking place. The association is gradually reverting to marsh vegetation.

Mhoon Series

The Mhoon series consists of poorly drained, slowly permeable soils. These soils are at low elevations in the slight depressions on the natural levees of the Mississippi River and its distributaries. They are level or depressional.

In a representative profile the surface layer is silty clay loam about 10 inches thick. It is dark grayish brown in the upper part and dark gray in the lower part. The subsoil is gray silty clay loam that extends to a depth of 37 inches. It is underlain by gray light silty clay loam.

Representative profile of Mhoon silty clay loam, in St. James Parish, 1¾ miles east of courthouse in Convent, 0.4 mile south of railroad, 42 feet west of field road, and 40 feet north of abandoned cane loader, sec. 33, T. 12 S., R. 4 E.:

Ap1—0 to 6 inches, dark grayish-brown (10YR 4/2) silty clay loam; weak, fine, granular structure and weak, moderate, subangular blocky structure; slightly sticky; many cane roots; neutral; clear, smooth boundary.

Ap2g—6 to 10 inches, dark-gray (5YR 4/1) heavy silty clay loam when moist, gray (10YR 5/1) when dry; common, medium, distinct, dark-brown (7.5YR 4/4) mottles; weak, thick, platy structure; very firm; reddish-brown stains on some ped faces; neutral; clear, wavy boundary.

B21g—10 to 19 inches, gray (10YR 5/1) heavy silty clay loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, coarse and medium, subangular blocky structure; firm; few pores; few black stains along root channels; mildly alkaline; clear, smooth boundary.

B22g—19 to 37 inches, gray (10YR 5/1) silty clay loam; common, medium, distinct, yellowish-brown (10YR 5/4) mottles; weak, coarse and medium, subangular blocky structure; firm; few pores, few black stains along channels; very few, small, brown and black concretions; mildly alkaline; clear, smooth boundary.

C1g—37 to 52 inches, gray (10YR 5/1) light silty clay loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; massive; slightly sticky; few pores; few roots; mildly alkaline.

The A horizon ranges from dark gray (10YR 4/1) through dark grayish brown (10YR 4/2) in color, from 5 to 12 inches in thickness, and from medium acid to mildly alkaline in reaction. The B horizon ranges from dark gray (10YR 4/1) through gray (5Y 5/1) and from neutral through moderately alkaline. The B horizon is stratified silt loam and silty clay loam, or it is silty clay loam throughout. In places the B horizon contains strata of clay or silty clay that have an aggregate thickness of 10 inches or less. The C horizon ranges from gray (10YR 5/1) through dark gray (5Y 4/1) in color, from silt loam to clay in texture, and from neutral to moderately alkaline in reaction.

Mhoon soils commonly adjoin Sharkey, Tunica, and Commerce soils. They contain less clay in the upper horizons than the Tunica soils and less clay throughout the subsoil than Sharkey soils. Mhoon soils are more poorly drained than Commerce soils.

Mhoon silty clay loam (Mh).—This level, poorly drained soil is in small, irregularly shaped depressions at low elevations on natural levees, mainly in the southeastern part of the survey area. The surface layer is dark grayish-brown silty clay loam 5 to 12 inches thick. The subsoil is gray silty clay loam mottled with brownish colors.

Included with this soil in mapping are areas of Commerce, Vacherie, and Sharkey soils that make up about 20 percent of the mapping unit.

Natural fertility is high. The content of phosphorus and potassium is high, and the nitrogen content is low. The surface layer is medium acid to mildly alkaline, and the subsoil is neutral to moderately alkaline. Surface runoff is very slow, and permeability is moderately slow. Internal drainage is slow, and the available water capacity is very high. The water table is within a depth of 10 inches during wet periods. Some of the lower areas are flooded for short periods following heavy rains.

The soil is moderately well suited to cultivated crops and well suited to pasture plants. Nearly all of it is planted to sugarcane. A few areas are in pasture or are idle. Moderately well suited cultivated crops include sugarcane, corn, and soybeans. Suitable pasture plants include Pensacola bahiagrass, johnsongrass, dallisgrass, tall fescue, and white clover. Good tilth is somewhat difficult to maintain because the surface layer is silty clay loam. This soil can be worked only within a fairly narrow range of moisture content. It tends to become cloddy when dry. Wetness restricts the use of sugarcane equipment during wet periods. A surface drainage system is needed to remove excess surface water for cultivated crops and pasture plants. Flooding in some of the lower areas may damage some crops. Most crops respond well to nitrogen fertilizer. This soil is in capability unit IIw-1.

This soil can be managed for quail, rabbits, and doves. Most of the area is cleared and is used for cultivated crops. Browntop millet grows well and provides a good supply of food for doves. Suitable crops that provide food for quail include shrub lespedeza, browntop millet, partridge peas, soybeans, and tickclover. All locally

Figure 4.—**Alligatorgrass and cypress trees. Typical vegetation Maurepas association. St. John the Baptist Parish.**

grown grasses and clover are suited and provide forage for rabbits. The areas that adjoin large wooded areas can be managed for deer. Well-suited crops that provide food for deer include adapted grasses and clovers, wheat, rye, and vetch. Fishponds and crawfish and duck fields can be established in most areas.

Only a small acreage is wooded. The main trees are cottonwood, sweetgum, sycamore, American elm, hackberry, pecan, and Nuttall oak. Trees suitable for commercial planting are green ash, sycamore, cottonwood, Nuttall oak, baldcypress, black willow, and sweetgum. Potential productivity is very high. The site index is 110 for cottonwood, 105 for sycamore, 85 for Nuttall oak, 100 for sweetgum, and 90 for green ash. Because this soil is poorly drained, equipment limitations are severe and seedling mortality is moderate.

Sharkey Series

The Sharkey series consists of poorly drained, very slowly permeable soils. These soils are on natural levees in slight depressions and at the lower back side of the natural levees near the swamps.

In a representative profile the surface layer is dark-gray clay about 10 inches thick. The underlying layers are gray, plastic and sticky clay to a depth of about 54 inches or more.

Representative profile of Sharkey clay in St. John the Baptist Parish, 2 miles northwest of Garyville, 0.7 mile east of the St. James-St. John Parish line, 45 yards south of U.S. Highway No. 61, 17 yards southeast of pipeline sign No. 48, 1 mile east of an aluminum plant entrance; Spanish Land Grant sec. 44, T. 11 S., R. 5 E.:

Ap1—0 to 6 inches, dark-gray (10YR 4/1) clay; common, fine, faint, dark yellowish-brown (10YR 4/4) mottles;

weak, fine, granular and weak, medium, subangular blocky structure; sticky and plastic; neutral; abrupt, wavy boundary.

Ap2—6 to 10 inches, dark-gray (10YR 4/1) clay; common, fine, distinct, dark-brown (7.5YR 4/4) and dark yellowish-brown (10YR 4/4) mottles; weak, medium and coarse, subangular blocky structure; plastic and sticky; moderately alkaline; abrupt, wavy boundary.

B21g—10 to 16 inches, gray (10YR 5/1) clay; many, fine and medium, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, medium and coarse, subangular blocky structure; plastic and sticky; moderately alkaline; clear, smooth boundary.

B22g—16 to 27 inches, gray (10YR 5/1, N 5/0) clay; many, fine and medium, distinct, dark-brown (7.5 YR 4/4) mottles; weak, medium, subangular blocky structure; plastic and sticky; moderately alkaline; clear, smooth boundary.

B23g—27 to 38 inches, gray (N 5/0) clay; many, medium and coarse, distinct, reddish-brown (5YR 4/4) mottles; plastic and sticky; moderately alkaline; clear, smooth boundary.

Cg—38 to 54 inches, gray (N 5/0) clay; many, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; massive; plastic and sticky; common, soft, brown, fine concretions; moderately alkaline.

The A1 horizon ranges from dark grayish brown (10YR 4/2) to dark gray (10YR 4/1) in color, from silty clay loam to clay in texture, and from 5 to 16 inches in thickness. In some places an A horizon that is less than 2 inches thick occurs. It ranges from dark gray (10YR 4/1) to very dark gray (10YR 3/1). The A horizon is slightly acid or neutral. The B horizon is gray (10YR 5/1, 2.5Y 5/1, 5Y 5/1, or N 5/0) or dark-gray (10YR 4/1 or N 4/0) clay mottled with shades of brown. The clay content of the B horizon ranges from 60 to 90 percent. Reaction is neutral to moderately alkaline.

Sharkey soils commonly adjoin Mhoon, Commerce, and Tunica soils on the higher sides of natural levees and Barbary soils on the lower sides. They are more poorly drained than Commerce soils and contain more clay. They also contain more clay than Mhoon soils and more clay in the lower part of the subsoil than Tunica soils. They do not have an organic surface layer or a semifluid subsoil, both of which are typical of Barbary soils.

Sharkey silty clay loam (Sh).—This level, very slowly permeable soil occupies depressions in the lower parts of natural levees and large areas near the toe of the levees. The surface layer is dark grayish-brown or dark-gray silty clay loam 5 to 16 inches thick. The subsoil is gray or dark-gray clay that has brownish mottles. Except for the surface layer, this soil has a profile similar to that described as representative for the series.

Included with this soil in mapping are areas of soils that have a silt loam surface layer. These included areas total about 1,000 acres. Also included are areas of Mhoon, Commerce, and Tunica soils that make up about 15 percent of the mapping unit.

Natural fertility is high, and the content of phosphorus and calcium is high. The content of nitrogen is low, and that of potassium is very high. The surface layer is slightly acid to neutral, and the subsoil is neutral to moderately alkaline. Surface runoff, permeability, and internal drainage are very slow. The available water capacity is high.

The water table is within a depth of 10 inches during wet periods. Some local areas are flooded after rains. About 90 percent of the acreage is cleared and used for cultivated crops and pasture.

This soil is moderately well suited to most cultivated crops and is well suited to most pasture plants. Most of the acreage is planted to sugarcane. The rest is mostly in pasture. A few areas are in rice. Among the moderately well suited cultivated crops are sugarcane, grain sorghum, soybeans, and rice. Suitable pasture plants include common bermudagrass, dallisgrass, johnsongrass, tall fescue, white clover, and Pensacola bahiagrass.

In places the seasonal high water table and the clayey subsoil restrict development of plant roots. Good tilth is somewhat difficult to maintain in the silty clay loam surface layer. This soil can be worked within only a fairly narrow range of moisture content without becoming cloddy when dry. Flooding is likely to damage crops in the depressions. Surface drainage is needed for cultivated crops and pasture. Most crops respond to nitrogen fertilizer. This soil is in capability unit IIIw–2.

This soil can be managed for rabbits, deer, and doves. It is excellent for ducks and crawfish and for fishponds. Rabbits and deer can be attracted by planting adapted tender grasses and clover. Browntop millet is well suited to this soil and is a good crop for doves. Woodland management that favors mast-producing trees benefits squirrels and deer. Ducks are attracted by fields planted to browntop millet and flooded from November to March. Smartweed and Japanese millet are also well suited plants that provide food for ducks. Ponds for bass and bluegill or catfish are easily established.

Only a small acreage is wooded. Among the trees in existing stands are cottonwood, cherrybark oak, Nuttall oak, water oak, sweetgum, green ash, American elm, hackberry, willow oak, pecan, and black willow. Trees suitable for planting are green ash, sycamore, cottonwood, cherrybark oak, swamp chestnut oak, water oak, willow oak, Nuttall oak, and sweetgum. Potential productivity is high. The site index is 100 for cottonwood; 90 for cherrybark oak, Nuttall oak, water oak, willow oak, and sweetgum; and 85 for green ash. Because of wetness, the equipment limitation is severe and seedling mortality is moderate.

Sharkey clay (Sk).—This level or depressional, very slowly permeable, poorly drained soil occupies lower parts of the natural levees of the Mississippi River and its distributaries. It also is in large low areas that are slightly above the level of flooding. The surface layer is dark-gray clay about 5 to 16 inches thick. The subsoil is gray clay mottled with shades of brown. This soil has the profile described as representative for the series.

Included with this soil in mapping are areas of Mhoon, Commerce, and Tunica soils. These included areas make up about 15 percent of the mapping unit. Also included are several areas of Sharkey association, frequently flooded, that have been protected from flooding by a system of levees and pumps.

Natural fertility is high. The content of phosphorus is high, and that of nitrogen is low. The content of potassium is very high. The surface layer is slightly acid, and the subsoil is neutral to moderately alkaline. The available water capacity is high. The water table is within a depth of 10 inches during wet periods. During rains some areas are flooded by runoff from higher areas. This soil shrinks when dry and swells when wet. Cracks about one-half inch wide form during dry periods and extend to a depth of about 20 inches.

Most of the acreage is cleared and used for cultivated crops and pasture. The rest is in hardwood trees.

This soil is moderately well suited to most kinds of cultivated crops and pasture plants. Most of the acreage is planted to sugarcane. Some is in pasture and woodland. Rice is grown in a few areas. Moderately well suited crops are sugarcane, grain sorghum, soybeans, and rice. Among the plants suitable for pasture are common bermudagrass, dallisgrass, johnsongrass, tall fescue, white clover, and Pensacola bahiagrass. In most years hay can be harvested from pasture during periods of its peak growth. The seasonal high water table and the clayey subsoil may restrict development of plant roots. Good tilth is difficult to maintain because the surface layer is clayey. This soil can be worked within only a narrow range of moisture content without becoming cloddy when dry. In some depressions flooding damages crops. Surface drainage is needed for cultivated crops and pasture. Most crops respond to nitrogen fertilizer. This soil is in capability unit IIIw-1.

This soil is well suited to management for rabbits, deer, and doves. The wooded areas can be managed for squirrels. The soil is excellent for ducks and crawfish and for fishponds. Rabbits and deer can be attracted by planting adapted tender grasses and clover. Browntop millet is well suited to this soil and supplies food in areas managed for doves. Woodland management that favors mast-producing trees benefits squirrels and deer. Ducks are attracted by fields planted to browntop millet and flooded from November to March. Smartweed and Japanese millet provide food for ducks. Crawfish fields and ponds for bass and bluegill or catfish are easily established.

Only a small acreage is wooded. Existing stands consist mostly of cottonwood, sweetgum, green ash, American elm, hackberry, Nuttall oak, pecan, and black willow. Trees suitable for planting are green ash, sycamore, cottonwood, Nuttall oak, water oak, willow oak, and sweetgum. Potential productivity is high. The site index is 100 for cottonwood, 90 for Nuttall oak and cottonwood, and 85 for green ash. Because this soil is wet, the equipment limitation is severe and seedling mortality is moderate.

Sharkey association, frequently flooded (Sm).—These poorly drained, clayey soils occupy bands on both sides of the Mississippi River, between the cleared natural levees and the swamp. They have a profile similar to that described as representative for the series, but the surface layer is thinner. The surface layer is dark-gray clay about 6 inches thick. The subsoil is dark-gray or gray clay that has brownish mottles.

Included in mapping are areas of Mhoon, Tunica, and Barbary soils. These included areas make up about 20 percent of the mapping unit. Also included are some higher areas that are not subject to flooding.

Natural fertility is high. The surface layer is slightly acid or neutral, and the subsoil is neutral to moderately alkaline. Surface runoff, permeability, and internal drainage are very slow. These soils swell when wet and shrink when dry. Cracks about one-half inch wide form during dry periods and extend to a depth of about 20 inches. The soils are subject to frequent flooding by up to 2 feet of water. The flooding is mainly in winter, in spring, and early in summer. All the acreage is in hardwoods.

Because of the flood hazard, these soils are not suited to most cultivated crops or to intensively managed pasture. The elevation is too low for removal of surface water by a gravity drainage system. Some of the higher areas can be managed for native grasses and clover if weeds and brush are controlled and the soils are not overgrazed. If protected from flooding by levees and pumps, these soils are moderately well suited to most pasture plants. They are in capability unit Vw-3.

Frequent flooding limits the potential of the soils for some kinds of wildlife. The soils can be used for fishponds and for crawfish and duck fields, if the water supply is adequate. Japanese millet is suited to these soils and provides a good supply of food for both ducks and crawfish. Woodland management that favors mast-producing trees benefits deer and squirrels.

Practically all the acreage is wooded. Existing stands are mostly sweetgum, green ash, American elm, hackberry, Nuttall oak, pecan, baldcypress, and water tupelo. Green ash, Nuttall oak, and baldcypress are suitable for planting. Potential productivity is moderately high. The estimated site index is 70 for green ash, 90 for cottonwood, and 80 for Nuttall oak and sweetgum. Seedling mortality and the equipment limitation are severe because of wetness and the hazard of flooding.

Tunica Series

The Tunica series consists of poorly drained soils. These soils occupy level or very slightly convex ridges on the back side of natural levees, mainly on the west side of the Mississippi River.

In a representative profile the surface layer is very dark gray clay about 5 inches thick. The subsoil is dark-gray clay about 22 inches thick. The underlying layer extends to a depth of about 51 inches and is light brownish-gray loam in the upper part and gray silt loam in the lower part.

Representative profile of Tunica clay, in St. James Parish, 2½ miles southeast of St. James Post Office, 2 miles west-southwest of Louisiana Highway No. 18, 120 feet south of main field road, and 110 feet southwest of pump, sec. 58, T. 12 S., R. 16 E.:

Ap—0 to 5 inches, very dark gray (10YR 3/1) clay; common, fine, faint, dark yellowish-brown (10YR 4/4) mottles; moderate, medium and fine, subangular blocky structure; hard; many grass and clover roots; slightly acid; gradual, wavy boundary.

B1g—5 to 19 inches, dark-gray (N 4/0) clay; common, fine, distinct, dark yellowish-brown (10YR 4/4) mottles inside of peds; moderate, coarse, subangular blocky structure that parts to moderate, fine, subangular blocky structure; very firm; common fine roots; common fine pores and grass roots; mildly alkaline; gradual, wavy boundary.

B2g—19 to 27 inches, dark-gray (N 4/0) clay; common, fine, distinct, dark-brown (7.5YR 4/4) mottles inside of peds; strong, coarse, subangular blocky structure; firm; light-gray silt coatings on major ped surfaces; interiors of some peds have light-gray (10YR 6/1) silt loam streaks; moderately alkaline; gradual, wavy boundary.

IIC1—27 to 33 inches, light brownish-gray (10YR 6/2) loam; many, medium, distinct, yellowish-brown (10YR 5/8) mottles; massive; friable; few pockets of dark-gray (N 4/0) clay; common pores; moderately alkaline; gradual, wavy boundary.

IIC2—33 to 51 inches, gray (5YR 5/1) silt loam; common, medium, prominent, dark-brown (7.5YR 4/4) mottles; massive; friable; moderately alkaline.

The A horizon ranges from dark gray (10YR 3/1) to dark grayish brown (10YR 4/2) in color, from slightly acid to moderately alkaline in reaction, and from 5 to 15 inches in thickness. It is silty clay loam to clay. The B horizon ranges from gray (10YR 5/1) to dark gray (N 4/0) in color, from neutral to moderately alkaline in reaction, and from 10 to 30 inches in thickness. Mottles are dark yellowish brown (10YR 4/4) through dark brown (7.5YR 4/4). The C horizon ranges from light brownish gray (10YR 6/2) to dark gray (N 4/0) and is mottled with yellowish brown (10YR 5/8) to dark brown (7.5YR 4/4). Reaction ranges from mildly alkaline to moderately alkaline. The C horizon is silty clay loam to fine sandy loam. Depth to loamy material ranges from 20 to 36 inches.

Tunica soils commonly adjoin the Sharkey, Commerce, and Mhoon soils. They are more clayey in the upper layers than Mhoon soils and are grayer and more clayey than the Commerce soils. They are less clayey in the lower layers than Sharkey soils.

Tunica clay (Tn).—This level to nearly level, very slowly permeable soil is at intermediate elevations on long, very slightly convex ridges at the back side of natural levees near the swamps. The surface layer is very dark gray clay about 5 inches thick. The subsoil is a dark-gray or gray clay mottled with dark brown. The subsoil is underlain with a loamy layer at a depth of 20 to 36 inches.

Included with this soil in mapping are areas of Sharkey, Mhoon, and Commerce soils that make up about 20 percent of the unit. Natural fertility is high. The content of phosphorus and potassium is high, and nitrogen content is low. The surface layer is slightly acid to moderately alkaline, and the subsoil is neutral to moderately alkaline. Surface runoff, permeability, and internal drainage are very slow. The available water capacity is high. The water table is at a depth of 15 inches during wet periods. Following local rains, a few areas are flooded by runoff from higher areas. When this soil is dry, cracks about one-half inch wide and 20 inches deep form. This soil shrinks when dry and swells when wet.

This soil is moderately well suited to most cultivated crops and pasture plants. It is planted mainly to sugarcane, and the rest is mainly used for pasture and trees. A few areas are in rice. Moderately well suited cultivated crops include sugarcane, grain sorghum, soybeans, and rice. Suitable pasture plants include common bermudagrass, dallisgrass, johnsongrass, tall fescue, white clover, and Pensacola bahiagrass. The seasonally high water table and the clayey subsoil restrict the development of plant roots. Good tilth is difficult to maintain in the clayey surface layer. This soil can be worked only within a narrow range of moisture content. It tends to become cloddy when dry. Crops may be damaged by flooding in the lower areas. A surface drainage system is needed for cultivated crops and pasture plants. Most crops respond to nitrogen fertilizer. This soil is in capability unit IIIw-1.

This soil is well suited to management for rabbits, deer, doves, and ducks. Ponds and water control structures for ducks are easily established. Wooded areas are also well suited to management for squirrels. Rabbits and deer are attracted to plantings of suitable tender grasses and clover. Browntop millet grows well and is a good crop in areas managed for doves. Woodland management that favors mast-producing trees benefits squirrels and deer. Well-suited crops that provide food for ducks are smartweed, browntop millet, and Japanese millet. Ponds for bass and bluegill or catfish and crawfish fields are also easily established.

Only a small acreage is wooded. Existing stands consist of such trees as cottonwood, sweetgum, green ash, American elm, cherrybark oak, water oak, willow oak, Nuttall oak, hackberry, sycamore, pecan, and black willow. Trees suitable for planting are green ash, sycamore, cottonwood, Nuttall oak, cherrybark oak, water oak, willow oak, and sweetgum. Potential productivity is high. The site index is 100 for cottonwood, 100 for Nuttall oak, 95 for water oak, 95 for willow oak, 100 for green ash, and 90 for sweetgum. Equipment limitations are severe and seedling mortality is moderate because this soil is poorly drained.

Vacherie Series, Sandy Variant

The Vacherie series, sandy variant, consists of somewhat poorly drained, very slowly permeable soils. These level to gently undulating soils are on low ridges on the natural levees.

In a representative profile the surface layer is about 10 inches thick. It is dark grayish-brown fine sandy loam in the upper part and grayish-brown very fine sandy loam in the lower part. The next layer is about 17 inches thick. In sequence from the top, the upper 4 inches is brown fine sandy loam; the next 8 inches is grayish-brown fine sandy loam, and the lower 5 inches is grayish-brown very fine sandy loam. Below this layer is dark-gray clay about 6 inches thick. The next layer is dark-gray and gray clay that extends to a depth of about 50 inches.

Representative profile of Vacherie fine sandy loam, sandy variant, in St. James Parish, 1 mile north of Romeville High School, 1½ miles north of Louisiana Highway No. 44, one-fifth of a mile east of main farm road, 24 feet east of field road (property line), and 30 feet north of parallel pipeline and telephone line, sec. 47, T. 11 S., R. 4 E.:

Ap1—0 to 6 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; effervescence delayed 2 or 3 minutes when treated with cold hydrochloric acid; moderately alkaline; abrupt, wavy boundary.

Ap2—6 to 10 inches, grayish-brown (10YR 5/2) very fine sandy loam; few, fine, faint, dark yellowish-brown (10YR 4/4) mottles and few, coarse, faint, gray (10YR 5/1) mottles; weak, thick, platy structure; slightly firm; effervescence delayed 2 or 3 minutes when treated with cold hydrochloric acid; compacted layer at base of plow layer; moderately alkaline; clear, smooth boundary.

C1—10 to 14 inches, brown (10YR 5/3) fine sandy loam; common, medium, distinct, gray (10YR 5/1) mottles and few, fine, faint, dark yellowish-brown (10YR 4/4) mottles; weak, thick, platy structure; friable; stratified with thin very faint bands of dark yellowish brown and gray; effervescence delayed 2 or 3 minutes when treated with cold hydrochloric acid; moderately alkaline; gradual, smooth boundary.

C2—14 to 22 inches, grayish-brown (10YR 5/2) fine sandy loam; many, medium, faint, brown (10YR 5/3) mottles and few, fine, faint, dark yellowish-brown (10YR 4/4) mottles; weak, thick, platy structure; friable; faint thin bedding planes; few black stains; effervescence delayed when treated with cold hydrochloric acid; moderately alkaline; gradual, wavy boundary.

C3—22 to 27 inches, grayish-brown (10YR 5/2) very fine sandy loam; common, medium, distinct, yellowish-brown (10YR 5/4) mottles and common dark yellowish-brown (10YR 4/4) and gray (10YR 5/1) mottles; weak, thick, platy structure; friable; faint thin bedding planes; effervescence delayed 2 or 3 minutes when treated with cold hydrochloric acid; moderately alkaline; abrupt, smooth boundary.

IIAbg—27 to 33 inches, dark-gray (5Y 4/1) clay; common, medium, distinct, dark reddish-brown (5YR 3/3) mottles; weak, medium and fine, subangular blocky structure; plastic and sticky; moderately alkaline.

IIBb2g—33 to 50 inches, gray (10YR 5/1) clay; common, medium, distinct, dark-brown (7.5YR 4/4) mottles; weak, medium, subangular blocky structure; plastic and sticky; moderately alkaline.

The A horizon ranges from grayish brown (10YR 5/2) to dark brown (10YR 4/3) in color, from 6 to 15 inches in thickness, and from slightly acid to moderately alkaline in reaction. The C horizon ranges from grayish brown (10YR 5/2) through brown (10YR 5/3) above a depth of 20 inches and from gray (2.5YR 5/1) through grayish brown (10YR 5/2) below a depth of 20 inches. The C horizon is fine sandy loam to very fine sandy loam and is neutral to moderately alkaline. It has faint to prominent bedding planes. Mottles are fine to medium and are in shades of brown or gray. The C horizon is underlain by dark-gray or gray clay IIAb and IIBb horizons at a depth of 15 to 30 inches. The IIAb and IIBb horizons range from neutral to moderately alkaline.

Vacherie sandy variant soils adjoin Convent, Convent sandy variant, Sharkey, and Commerce soils. They have a higher sand content in the upper horizons than the Convent, Convent, sandy variant, and Commerce soils, and a higher clay content in the lower horizons. They have more sand and less clay in the upper horizons than the Sharkey soils. Vacherie sandy variant soils are similar to Vacherie silt loam but have a higher sand content above the clay layer.

Vacherie fine sandy loam, sandy variant (Va).—This very slowly permeable, level to gently undulating soil is in narrow bands on the outer edges of low ridges in the central part of the survey area. The ridges are the result of levee breaks along the Mississippi River. The area originally consisted of a series of parallel ridges and sloughs, but most of the area has been graded and leveled.

The surface layer is dark grayish-brown, very friable fine sandy loam about 6 inches thick. The underlying layer is grayish-brown or brown fine sandy loam or very fine sandy loam that has dark yellowish-brown and gray mottles. The lower layers are dark-gray or gray clay that has brownish mottles.

Included with this soil in mapping are small areas of Convent, Commerce, Sharkey, and Vacherie soils and a few large areas that have not been leveled and have slopes up to 3 percent.

Natural fertility is high. The content of phosphorus and potassium is high, and nitrogen content is low. The surface layer is medium acid to mildly alkaline, and the layers under it are neutral to moderately alkaline. Runoff is slow. Internal drainage is rapid in the upper layers and very slow in the lower clay layers. The water table is within a depth of 15 inches during wet periods. Some of the swales are flooded following local rains. The available water supplying capacity is high.

Most of the acreage is cleared and planted to sugarcane. Well-suited cultivated crops include sugarcane, corn, oats, and soybeans. Some truck crops are moderately well suited. Suitable pasture plants include Pensacola bahiagrass, johnsongrass, dallisgrass, ryegrass, and white clover. Hay generally can be harvested from pastures during periods of peak growth. This soil is very friable and is easy to keep in good tilth. Young truck crops may be damaged when heavy rains wash the loose soil from the roots. The clayey subsoil layers and the high water table restrict root development of some plants during wet periods. A surface drainage system is needed. Land grading or smoothing improves surface drainage and improves the efficiency of farm equipment in areas not leveled. Crops respond well to nitrogen fertilizer. This soil is in capability unit IIw–2.

Most of the soil has been cleared and can be managed for quail, rabbits, and doves. Browntop millet grows well and provides food for doves. Suitable food crops for quail include browntop millet, partridge peas, soybeans, and tickclover. A good food supply for rabbits is provided by all locally grown grasses and clovers that furnish tender forage late in winter and early in spring. The few places where this soil adjoins large wooded areas can be managed for deer. Well-suited crops that produce food for deer include vetch, wheat, and the commonly grown grasses and clovers. Fishponds and water control structures for duck and crawfish management can be constructed.

Only a small acreage is wooded. The principal trees are green ash, cottonwood, sweetgum, sycamore, Nuttall oak, water oak, American elm, hackberry, and pecan. Trees suitable for commercial planting are green ash, sycamore, cottonwood, Nuttall oak, water oak, and sweetgum. Potential productivity is very high. The site index is 80 for green ash, 100 for sweetgum, 120 for cottonwood, 90 for Nuttall oak, 110 for water oak, and 100 for sycamore. Seedling mortality is slight. Equipment limitations are moderate to slight because this soil is somewhat poorly drained.

Vacherie Series

The Vacherie series consists of somewhat poorly drained, very slowly permeable soils that have a loamy surface layer over a clayey subsoil. These nearly level soils are on natural levees.

In a representative profile the surface layer is about 12 inches thick. It is dark grayish-brown silt loam in the upper 6 inches and dark-gray silt loam in the lower 6 inches. The next layer is friable, grayish-brown silt loam about 8 inches thick. It is underlain by dark-gray clay 10 inches thick and that, in turn, by gray clay 20 inches thick.

Representative profile of Vacherie silt loam, in St. James Parish, 5½ miles west-southwest of Vacherie, 450 feet north-northwest of cane derrick, 0.4 mile south of railroad, one-third mile west of main farm road; Spanish Land Grant sec. 39, T. 12 S., R. 16 E.

Ap1—0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure and weak, fine, subangular blocky structure; very friable; common roots; mildly alkaline; clear, smooth boundary.

Ap2—6 to 12 inches, dark-gray (N 4/0) silt loam; common, coarse, distinct, dark grayish-brown (10YR 4/2) and dark yellowish-brown (10YR 4/4) mottles; moderate, thick, platy structure; very firm; common roots and partly decomposed sugarcane residue; dark yellowish-brown stains on horizontal ped surfaces; thin, patchy, grayish-brown silt coatings on some ped surfaces; moderately alkaline; clear, wavy boundary.

B—12 to 20 inches, grayish-brown (10YR 5/2) silt loam; common, medium, distinct, yellowish-brown (10YR 5/4) and dark yellowish-brown (10YR 4/4) mottles; weak, medium, subangular blocky structure; friable; few roots; few fine pores; few worm casts; moderately alkaline; abrupt, smooth boundary.

IIAbg—20 to 30 inches, dark-gray (10YR 4/1) clay; common, medium, distinct, dark-brown (7.5YR 4/4) mottles; weak, medium and fine, subangular blocky structure; firm; few roots; few fine pores; moderately alkaline; clear, smooth boundary.

IIBbg—30 to 50 inches +, gray (10YR 5/1) clay; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, medium, subangular blocky structure; sticky and plastic; moderately alkaline.

The A horizon ranges from grayish brown (10YR 5/2) through dark gray (10YR 4/0) in color, from 6 to 14 inches in thickness, and from medium acid to mildly alkaline in reaction. The B horizon is dark grayish-brown (10YR 4/2) to grayish-brown (2.5Y 5/2) silt loam or very fine sandy loam. The content of clay in the B horizon ranges from 8 to 15 percent, and the content of sand coarser than very fine sand ranges from 5 to 15 percent. The reaction is mildly alkaline or moderately alkaline. Depth to the IIA or IIB horizon ranges from 15 to 36 inches. The IIA and IIB horizons are dark gray (10YR 4/1) or gray (10YR 5/1) and are silty clay or clay. Reaction is mildly alkaline to moderately alkaline.

Vacherie soils commonly adjoin Sharkey, Convent, and Commerce soils. They have more clay in the lower subsoil layers than Convent and Commerce soils and less clay in the upper horizons than the Sharkey soils. They are similar to the Vacherie sandy variant soils but have less sand in the upper layers.

Vacherie silt loam (Vh).—This nearly level, somewhat poorly drained soil occurs in irregularly shaped areas on the lower part of natural levees of the Mississippi River and its distributaries throughout the survey area. The surface layer is dark grayish-brown silt loam 6 to 15 inches thick. The subsoil is a grayish-brown silt loam or very sandy loam that has brownish mottles. It is underlain by dark-gray or gray clay at a depth of 15 to 36 inches.

Included with this soil in mapping are several small areas of Commerce and Sharkey soils.

Natural fertility is high. The content of phosphorus and potassium is high, and nitrogen is low. The surface layer is medium acid to mildly alkaline, and the layers under it are mildly alkaline or moderately alkaline. Runoff is slow, and permeability is very slow. Internal drainage is moderately slow in the upper layers and very slow in the lower layers. The available water capacity is high. The water table is within a depth of 15 inches during wet periods, mainly in winter, in spring, and early in summer. Some of the lower areas are flooded with a few inches of water following heavy rains.

This soil is well suited to cultivated crops and pasture plants. Most of the acreage is planted to sugarcane. A few small areas are in truck crops. Suitable crops include sugarcane, corn, oats, soybeans, and all commonly grown truck crops. Suitable pasture plants include common bermudagrass, dallisgrass, Pensacola bahiagrass, ryegrass, and white clover. The seasonal high water table and the clay subsoil restrict root development of some deep-rooted plants. This soil is friable and is easy to keep in good tilth. Trafficpans develop easily, but they can be broken by chiseling or deep plowing. A surface drainage system is needed. Land grading or smoothing improves surface drainage and increases the efficiency of farm equipment. Most crops respond to nitrogen fertilizer. This soil is in capability unit IIw-2.

This soil can be managed for quail, rabbits, and doves. Most of the acreage is cleared and used for cultivated crops. Browntop millet grows well and can be planted in rows in areas managed for doves. Well-suited crops that provide food for quail include shrub lespedeza, browntop millet, partridge peas, soybeans, and tickclover. All locally grown tender grasses and clovers are well suited and provide excellent food for rabbits. The acreage that adjoins large wooded areas can be managed for deer. This soil is well suited to grasses, clover, wheat, rye, and vetch, all of which provide food for deer. Fishponds and crawfish and duck fields can be established.

Wooded areas are small and scattered. The principal trees are cottonwood, sweetgum, sycamore, American elm, hackberry, pecan, and Nuttall oak. Trees suitable for commercial planting are green ash, sycamore, cottonwood, water oak, Nuttall oak, and sweetgum. Potential productivity is very high. The site index is 120 for cottonwood, 80 for green ash, 90 for Nuttall oak, 110 for water oak, and 120 for sycamore. Seedling mortality is slight. Equipment limitations are moderate because this soil is somewhat poorly drained.

Use of the Soils for Crops and Pasture

The soils of this survey area are used mainly for cultivated crops, wildlife, and woodland. This section explains in a general way how the soils can be managed for crops and pasture. It also defines the system of capability classification used by the Soil Conservation Service and gives the estimated yields per acre of the principal crops under high level management.

Fertilizing and liming.—The soils in the survey area are mostly medium acid to moderately alkaline. Because the soils in cropland are low in organic-matter content and available nitrogen, nitrogen fertilizer is needed for best plant growth of most nonlegumes. Most of the soils are moderate to high in phosphorus, potassium, and calcium. The need for fertilizer and lime should be determined by soil tests.

Maintaining organic matter.—Organic matter is an important source of nitrogen, and it also helps to increase rate of water intake, to reduce surface crusting, and to improve tilth. In the soils used for sugarcane, organic-matter content is maintained by the residue from the extensive roots of sugarcane and from the sugarcane stalks and leaves. The supply of organic matter also can be maintained by growing other crops that have an extensive root system and an abundance of foliage, by leaving plant residue on the soil, by growing perennial grasses and legumes in rotation with other crops, and by adding manure.

Tillage.—Excess tillage should be avoided. Soils should be tilled just enough to prepare seedbeds and control weeds. When plowed at higher moisture contents, the fine-textured soils form clods. In some soils compact layers form where cultivating equipment, particularly heavy sugarcane harvesting equipment, is used. This compact layer, generally called a trafficpan or plowpan, develops

just below the plow layer. It can be broken up by chiseling or deep plowing.

Drainage and flood control.—Excess water must be removed from all cultivated soils in the survey area. Soils at the higher elevations are drained by a gravity drainage system consisting of a series of mains, laterals, and split ditches. An adequate outlet is necessary for the proper functioning of this system. A main levee system along the Mississippi River protects the entire survey area from flooding by the river. The lower cultivated areas that lack an adequate outlet and are subject to flooding by heavy local rains are drained and protected from flooding by a system of levees and pumps.

A small acreage has been graded. This practice consists of precision leveling to uniform grade. Land grading improves surface drainage, eliminates cross ditches, makes longer rows possible, and increases efficiency of farm equipment.

Capability Grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for range, for forest trees, or engineering.

In the capability system, all kinds of soil are grouped at three levels, the capability class, the subclass, and the unit. These levels are described in the following paragraphs.

CAPABILITY CLASSES, the broadest group, are designated by Roman numerals I through VIII. In class I are soils that have few limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so rough, so shallow, or otherwise so limited that they do not produce worthwhile yields of crops, forage, or wood products.

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIw. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c*, because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, range, woodland, wildlife, or recreation.

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIw-1 or IIIw-1. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

The eight classes in the capability system and the subclasses and capability units represented in the survey area are described in the list that follows. The capability unit assigned to any soil is listed at the end of the description of that soil in the section "Descriptions of the Soils" and in the "Guide to Mapping Units" at the back of this survey.

Class I soils have few limitations that restrict their use.
- Capability unit I-1: Somewhat poorly drained, loamy soils.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- Subclass IIw soils have moderate limitations because of excess water.
  - Capability unit IIw-1: Poorly drained and somewhat poorly drained soils that have a silty clay loam surface layer.
  - Capability unit IIw-2: Somewhat poorly drained soils that have a loamy surface layer and clayey lower layers.
  - Capability unit IIw-3: Somewhat poorly drained soils that have a loamy surface layer and loamy lower layers.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Subclass IIIw soils have severe limitations because of wetness.
  - Capability unit IIIw-1: Poorly drained, very slowly permeable, clayey soils.
  - Capability unit IIIw-2: Poorly drained, very slowly permeable soils that have a silty clay loam surface layer and a clayey subsoil.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both. (No class IV soils in the survey area.)

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife habitat.

Subclass Vw soils have very severe limitations because flooding is frequent.

Capability unit Vw–1: Somewhat poorly drained and very poorly drained, loamy and clayey soils that are frequently flooded.

Capability unit Vw–2: Somewhat poorly drained, loamy soils that are frequently flooded.

Capability unit Vw–3: Poorly drained, clayey soils that are frequently flooded.

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife habitat. (None in survey area.)

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife habitat.

Subclass VIIw soils have very severe limitations because the water table is continuously high and flooding is very frequent.

Capability unit VIIw–1: Marsh soils that have a thick, mucky peat surface layer over clayey material; flooded almost continuously.

Capability unit VIIw–2: Swamp soils that have a mucky surface layer over semifluid, clayey material; flooded almost continuously.

Class VIII soils and landforms have limitations that preclude their use for commercial crop production and restrict their use to recreation, wildlife habitat, or water supply, or to esthetic purposes.

Subclass VIIIw soils have very severe limitations because the water table is continuously high and trafficability is very poor.

Capability unit VIIIw–1: Organic soils that have very low bearing capacity.

Estimated Yields

In table 2, the estimated yields of the principal crops are shown for each soil in the survey area under high-level management. These are yields averaged through a 10-year period. The estimates are based chiefly on observations made by members of the soil survey party, on information supplied by farmers and other agricultural workers, and on long-term experiments. All estimates are based on average rainfall, adequate drainage, and control of flooding. Irrigation was not considered.

High-level management includes: (1) good seedbed preparation, (2) use of suitable, high-yielding crop varieties, (3) fertilization according to the needs determined through soil tests, (4) control of insects, weeds, and plant diseases, (5) drainage for naturally wet soils, (6) measures for control of overflow and erosion, and (7) timely operations.

TABLE 2.—*Estimated average acre yields of principal crops under high-level management*

[Absence of figure indicates crop is not commonly grown]

Soil	Sugarcane	Corn	Soybeans	Common bermudagrass	Rice
	Tons	*Bu.*	*Bu.*	*A.U.M.*[1]	*Bu.*
Allemands mucky peat					
Barbary association					
Carlin peat					
Commerce silt loam	35	90	40	8.5	
Commerce silty clay loam	35	80	40	8.5	
Convent and Barbary soils, frequently flooded					
Convent complex	35	90	40	8.5	
Convent fine sandy loam, sandy variant	33	80	40	8.0	
Convent soils and Silty alluvial land, frequently flooded					
Maurepas association					
Mhoon silty clay loam	32	60	35	7.5	95
Sharkey association, frequently flooded				4.0	
Sharkey clay	30	60	35	7.0	95
Sharkey silty clay loam	32	60	35	7.5	95
Tunica clay	32	60	35	7.0	95
Vacherie fine sandy loam, sandy variant	33	75	40	8.0	
Vacherie silt loam	33	80	40	8.0	95

[1] Animal-unit-month is a term used to express the carrying capacity of pasture. It is the number of animal units carried per acre multiplied by the number of months the pasture is grazed during a single grazing season without injury to the sod. An acre of pasture that provides 2 months of grazing for 2 cows has a carrying capacity of 4 animal-unit-months.

Woodland[2]

Commercial hardwood forest covers 53.6 percent of St. James Parish and 65.1 percent of St. John the Baptist Parish. The total acreage of woodland in the two parishes is 179,200 acres. All is privately owned. Most of the better drained land, which is at the higher elevations, has been cleared for other uses. Timber is grown primarily on the soils in low-lying areas that are subject to flooding (fig. 5).

Information about the use and management of the soils as woodland is given in the description of each mapping unit in the section "Descriptions of the Soils."

[2] By H. FORD FALLIN, State woodland conservationist, Soil Conservation Service.

***Figure 5.*—Typical vegetation on Barbary muck. Baldcypress and water tupelo.**

The main factors affecting woodland management in St. James and St. John the Baptist Parishes are described in the paragraphs that follow.

Productivity is expressed in terms of site index, which is the height, in feet, to which a tree grows in a specified number of years, generally 30 years for cottonwood and 50 for other trees. The site indexes given in the descriptions of the mapping units are rounded off to the nearest 5 feet. A major part of the site index data and species suitability information was furnished by Walter M. Broadfoot, soil scientist, U.S. Department of Agriculture, Forest Service, Southern Hardwoods Laboratory, Stoneville, Miss., in cooperation with the Mississippi Agricultural Experiment Station and the Southern Hardwood Forest Research Group.

Equipment limitation refers to restrictions in the use of equipment for managing or harvesting the tree crop. A rating of *slight* indicates little or no restriction on the type of equipment that can be used or the time of year it can be used. *Moderate* indicates a need for modified equipment or seasonal restrictions because the soil is wet or flooded. *Severe* indicates the need for special equipment.

Seedling mortality refers to expected mortality of seedlings during the first two seasons after planting or natural regeneration, as a result of unfavorable topography or soil characteristics, not plant competition. Normal rainfall, adequate site preparation, good planting methods, and appropriate protection and cultivation are assumed. A rating of *slight* indicates loss of less than 25 percent of the natural or planted seedlings; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Wildlife [3]

The soils of St. John the Baptist and St. James Parishes furnish suitable habitat for many kinds of wildlife and fish. Some species are present in large numbers, whereas others are relatively scarce or are seasonal. The numbers of these game birds and animals and fish depend on the available habitat and the amount and quality of the water.

St. James Parish has a moderate number of deer, squirrels, and rabbits. Most of the woodlands are leased for hunting by local hunting clubs. The numbers of quail, doves, and ducks are small. The lack of suitable habitat of brushy areas and weedy fields limits the number of quail. The types of farm crops in St. James Parish are not conducive to increasing the dove population, because few grain or seed crops are grown. The lack of a food supply in the flooded areas limits the number of ducks.

St. John the Baptist Parish also has moderate numbers of deer, squirrels, and rabbits. Wintering ducks, which are mallards, teal, pintails, scaup, ringnecks, and wood ducks, are in large numbers. They are concentrated around the margins of Lac Des Allemands, Lake Maurepas, and Lake Pontchartrain. Most of the hunting for these migratory birds is around the shores of these lakes, since the crops generally grown in the farming area do not attract waterfowl. Like St. James Parish, St. John the Baptist Parish has small numbers of quail and doves because few grain and seed crops are grown.

The fishing in St. James Parish is limited because suitable water is lacking. Most of the fish in this parish are produced in the Blind and Mississippi Rivers.

St. John the Baptist Parish has very good fishing because it borders on Lac Des Allemands, Lake Maurepas, and Lake Pontchartrain. Sports fishing for blue, channel catfish, and flathead catfish is excellent in Lac Des Allemands and is very good in the other two main lakes. Plentiful in all three of these lakes are black and yellow bass, white perch, white and black crappie, bluegill, red-ear sunfish, and warmouth. Because it is saline, Lake Pontchartrain also produces spotted and sand sea trout, red drum, and sheepshead. Lake Pontchartrain and Lac Des Allemands produce blue crabs and shrimp in varying amounts.

The marshy and swampy margins of these lakes also produce variable populations of muskrats, nutrias, mink, and otter. These animals are processed by a trapping industry of moderate size.

Information on the use of the soils for wildlife is given in the description of each mapping unit in the section "Descriptions of the Soils."

Use of the Soils in Engineering

Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, pipelines, building foundations, facilities for water storage, erosion control structures, drainage systems, and sewage disposal systems. Among the properties most important to engineers are permeability, strength, consolidation characteristics, texture, plasticity, and soil reaction.

Information concerning these and related soil properties is given in tables 3, 4, and 5. The estimates and interpretations in these tables can be used to—

1. Make studies that will aid in selecting and developing sites for industrial, commercial, residential, and recreational sites.
2. Make studies that will aid in selecting locations for highways, airports, pipelines, underground cables, and sewage disposal fields, and in planning detailed investigations at selected locations,
3. Correlate performance with soil mapping units to develop information that will be useful in designing and maintaining engineering structures.
4. Supplement other published information, such as maps, reports, and aerial photographs, that is used in the preparation of engineering reports for a specific area.
5. Develop other preliminary estimates for construction purposes pertinent to the particular area.

The engineering interpretations reported here do not eliminate the need for sampling and testing at the site of specific engineering works, especially for structures involving heavy loads or excavations deeper than the depths reported. Even in these situations, however, the soil map is useful in planning more detailed field investigations and in indicating the kinds of problems that may be expected.

Some of the terms used by soil scientists have special meanings in soil science that may not be familiar to engineers. These terms are defined in the Glossary.

Engineering classification systems

The two systems most commonly used in classifying soils for engineering are the systems approved by the American Association of State Highway Officials (AASHO) and the Unified system.

The AASHO system (*1*) is used to classify soils according to those properties that affect use in highway construction. In this system all soil material is classified in seven principal groups. The groups range from A–1, which consists of soils that have the highest bearing strength and are the best soils for subgrade, to A–7, which consists of soils that have the lowest strength when wet. In addition to the seven groups in the AASHO system, the Louisiana Department of Highways uses group A–8 for soil that is more than 15 percent organic material. Group A–8 soils are generally not suitable for subgrade or embankment material. Within each group, the relative engineering value of the soil material is indicated by a group index number. The numbers range from 0, for the best material, to 20, for the poorest.

In the Unified system (*13*) soils are classified according to their texture and plasticity and their performance as engineering construction material. Soils are grouped in 15 classes. There are eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils,

[3] By RAY SMITH, biologist, Soil Conservation Service.

TABLE 3.—*Engineering*

[Tests performed by the Louisiana Department of Highways in accordance with standard

Soil name and location	Louisiana Report No.	Depth	Mechanical analysis [1]					
			Percentage passing sieve—		Percentage smaller than—			
			No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.
Barbary muck:		*In.*						
St. James Parish: 7 miles south of Vacherie, 125 feet east of State Highway No. 20, sec. 34, T. 13 E., R. 17 E.	39993	12–30	98	95	(2)	(2)	78	(2)
Commerce silty clay loam:								
St. James Parish: 1½ miles southeast of Salsburg and ½ mile southwest of State Highway No. 30, sec. 48, T. 11 S., R. 15 E.	39990	4–9	100	97	(2)	(2)	41	(2)
	39989	22–38	100	98	(2)	(2)	37	(2)
Convent silt loam:								
St. John the Baptist Parish: 0.6 mile southeast of intersection of U.S. Highway Nos. 51 and 61 at Laplace, 0.2 mile northeast of U.S. Highway No. 61, sec. 30, T. 11 S., R. 7 E.	R–3851	10–19	100	98	92	37	17	15
	R–3852	63–70	100	56	38	11	9	8
Sharkey clay:								
St. James Parish: ¾ mile southeast of Salsburg, 1,700 feet southwest of T. and P. Railroad, sec. 21, T. 12 S., R. 15 E.	39992	4–9	100	99	(2)	(2)	62	(2)
	39988	9–22	100	99	(2)	(2)	62	(2)
	39994	22–44	100	99	(2)	(2)	78	(2)

[1] Mechanical analysis according to AASHO Designation: T 88–57 (1). Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method, and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method, and the material coarse

TABLE 4.—*Estimates of properties*

[An asterisk in the first column indicates that at least one mapping unit in the series is made up of two or more kinds of soil. The soils in referring to other series that appear in the first column of this table. The symbol > means

Soil series and map symbols	Depth from surface (typical profile)	Classification			Percentage passing sieve—	
		Dominant USDA texture	Unified	AASHO	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)
	In.					
Allemands: Am	0–33	Peat and muck	Pt	A–8 [1]		
	33–50	Clay or mucky clay	CH, OH	A–7–6, A–7–5		95–100
Barbary: Ba	0–6	Muck	Pt	A–8 [1]		
	6–50	Mucky clay and clay	CH, OH, MH	A–7–6, A–7–5		95–100
Carlin: Ca	0–60	Peat and muck	Pt	A–8 [1]		
Commerce: Cm, Cn	0–12	Silt loam or silty clay loam	ML, CL	A–4, A–6, A–7–6	95–100	95–100
	12–52	Silty clay loam and heavy silt loam.	CL	A–6, A–7–6	95–100	85–100
	52–80	Fine sandy loam and silty clay loam.	ML, CL	A–4, A–6, A–7–6	95–100	85–95
Convent, sandy variant: Co	0–58	Stratified very fine sandy loam, fine sandy loam, loamy very fine sand.	SM, ML	A–4	90–100	40–95

test data

procedures of the American Association of State Highway Officials (AASHO)]

Liquid limit	Plasticity index	Shrinkage		Moisture-density data		Dispersion	Classification	
		Limit	Ratio	Maximum dry density	Optimum moisture content for maximum dry density		AASHO	Unified
				Lb./cu. ft.	*Pct.*	*Pct.*		
80	37	9. 6	1. 73	(2)	(2)	2. 6	A–7–6	MH
42	22	(2)	1. 75	(2)	(2)	17. 1	A–7–6	CL
41	22	(2)	1. 75	(2)	(2)	16. 2	A 7 6	CL
28	(3)	23. 3	1. 57	102	19	35	A–4	ML
(2)	(3)	(2)	(2)	100	17	78	A–4	ML
63	38	12. 6	1. 88	(2)	(2)	12. 9	A–7–6	CH
63	37	12. 5	1. 87	(2)	(2)	16. 1	A–7–6	CH
79	51	12. 5	(2)	(2)	(2)	(2)	A–7–6	CH

than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for naming textural classes for soils.

[2] Not determined.

[3] Nonplastic.

significant in engineering

such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for more than. Absence of data indicates estimate was not made]

Reaction	Permeability	Available water capacity	Shrink-swell potential	Corrosion potential	Wetness hazard	Flooding hazard	Subsidence potential
pH	*In./hr.*	*In./in. soil*					
5. 1–8. 3	----------	----------	----------	Very high	Very severe	Very severe	High.
6. 6–8. 3	>0. 00–0. 06	0. 20	Very high.				
5. 6–8. 3	----------	----------	----------	Very high	Very severe	Very severe	Medium.
6. 1–8. 3	>0. 00–0. 06	0. 20	Very high.				
5. 1–8. 3	----------	----------	----------	Very high	Severe	Very severe	Very high.
5. 6–7. 8	0. 2–0. 63	0. 21 0. 23	Low to moderate.	High	Moderate	None to slight	Low.
6. 6–8. 3	0. 2–0. 63	0. 21–0. 22	Low to moderate.				
6. 6–8. 3	0. 2–2. 0	0. 21–0. 23	Low to moderate.				
5. 6–8. 3	0. 63–2. 0	0. 14–0. 23	Low	Moderate	Slight to moderate.	None to slight	Low.

TABLE 4.—*Estimates of properties*

Soil series and map symbols	Depth from surface (typical profile)	Classification			Percentage passing sieve—	
		Dominant USDA texture	Unified	AASHO	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)
	In.					
*Convent: Cr, Cs, Ct. For Barbary part of Cs, see Barbary series. No valid estimates can be made for Silty alluvial land part of Ct.	0–52	Stratified silt loam and very fine sandy loam.	ML, ML–CL	A–4	95–100	60–100
Maurepas: Ma	0–72	Peat or muck	Pt	A 8[1]		
Mhoon: Mh	0–37	Silty clay loam	CL	A–6, A–7–6		95–100
	37–48	Silty clay loam; in places, thin layers of silt loam or silty clay.	CL, CH	A–6, A–7–6		95–100
Sharkey: Sh, Sk, Sm	0–6	Clay or silty clay loam	CL, CH	A–6, A–7–6, A–7–5	100	95–100
	6–54	Clay	CH	A–7–6, A–7–5	100	95–100
Tunica: Tn	0–27	Clay or silty clay	CH	A–7–6	100	95–100
	27–51	Silt loam, silty clay loam, loam, or very fine sandy loam.	ML, CL	A–4, A–6	100	85–100
Vacherie, sandy variant: Va	0–27	Very fine sand loam to fine sandy loam.	SM, ML	A–4	90–100	45–95
	27–50	Clay	CH	A–7–6, A–6	100	95–100
Vacherie: Vh	0–20	Silt loam, very fine sandy loam.	ML, ML–CL	A–4	95–100	60–90
	20–50	Clay	CH	A–7–6	100	95–100

[1] Classification A–8 is used by the Louisiana Department of Highways for soils that are more than 15 percent organic materials.

TABLE 5.—*Engineering*

[An asterisk in the first column indicates that at least one mapping unit in the series is made up of two or more kinds of soil. The soils referring to other series that appear

Soil series and map symbols	Degree of limitation and chief limiting factors for—						
	Homesites	Septic tank filter fields	Sewage lagoons	Landscaping and gardening	Picnic areas, golf fairways, and campsites	Playgrounds	Paved streets, airport runways, and parking areas
Allemands: Am	Very severe: very severe flooding; low bearing capacity; high subsidence potential.	Very severe: very severe flooding; high subsidence potential.	Very severe: very severe flooding; high subsidence potential.	Very severe: very severe flooding; high subsidence potential.	Very severe: very severe flooding; high subsidence potential.	Very severe: very severe flooding; high subsidence potential.	Very severe: very severe flooding; poor to unsuitable subgrade material; high subsidence potential.
Barbary: Ba	Very severe: very severe flooding; high shrink-swell potential; very low bearing capacity; medium subsidence potential.	Very severe: very severe flooding; medium subsidence potential.	Severe: very severe flooding; medium subsidence potential.	Very severe: very severe flooding; medium subsidence potential.	Very severe: very severe flooding; medium subsidence potential.	Very severe: very severe flooding; medium subsidence potential.	Very severe: flooding; medium subsidence potential.

significant in engineering—Continued

Reaction	Permeability	Available water capacity	Shrink-swell potential	Corrosion potential	Wetness hazard	Flooding hazard	Subsidence potential
pH 5. 6–8. 3	*In./hr.* 0. 63–2. 0	*In./in. soil* 0. 21–0. 23	Low	High	Moderate	None to slight on Cr and very severe on Cs and Ct.	Low.
5. 1–7. 8	----------	----------	----------	Very high	Very severe	Very severe	Very high.
5. 6–7. 8	0. 06–0. 20	0. 20–0. 22	Moderate to high.	High	Severe	None to slight	Low.
6. 6–8. 3	0. 06–0. 20	0. 21–0. 23					
6. 1–7. 3	>0. 00–0. 20	0. 18–0. 22	Moderate to very high.	Very high	Severe	Slight on Sh and Sm and very severe on Sk.	Low.
6. 6–8. 3	>0. 00 0. 06	0. 18–0. 20	Very high.				
6. 1–8. 3 6. 6–8. 3	>0. 00–0. 06 0. 20 -2. 0	0. 18–0. 20 0. 21–0. 23	Very high Low to moderate.	Very high	Severe	None to slight	Low.
6. 1–8. 3	0. 63–2. 0	0. 14–0. 20	Low	High	Moderate	None to slight	Low.
6. 6–8. 3	>0. 00–0. 06	0. 18–0. 20	Very high.				
5. 6–8. 3	0. 63–2. 0	0. 21–0. 23	Low	High	Moderate	None to slight	Low.
7. 4–8. 3	>0. 00–0. 06	0. 18–0. 20	Very high.				

interpretations

in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions in the first column of this table]

Factors affecting use for—				Suitability as a source of—				
Foundations for low buildings	Highway location	Land grading or shaping	Drainage	Topsoil	Highway subgrade	Highway subbase	Levee (homogenous)	Soil cement base material
Very severe flooding; high compressibility; very low shear strength; high subsidence potential.	Very severe flooding; poor to unsuitable subgrade material; high subsidence potential.	Very severe flooding; high subsidence potential.	Very severe flooding; high subsidence potential.	Not suitable: organic part decomposes too rapidly.	Poor to not suitable: organic part unstable; very severe wetness.	Not suitable: organic part unstable; very severe wetness.	Poor to not suitable: organic part unstable; very severe wetness.	Not suitable: organic part decomposes.
Very severe flooding; high compressibility; very low shear strength; medium subsidence potential.	Very severe flooding; poor to unsuitable subgrade material; medium subsidence potential.	Very severe flooding; medium subsidence potential.	Very severe flooding; medium subsidence potential.	Not suitable: organic part decomposes too rapidly.	Poor to not suitable: organic part unstable; very severe wetness.	Not suitable: organic part unstable; very severe wetness.	Poor to not suitable: organic part unstable; very severe wetness.	Not suitable: organic part decomposes.

TABLE 5.—*Engineering*

Soil series and map symbols	Degree of limitation and chief limiting factors for—						
	Homesites	Septic tank filter fields	Sewage lagoons	Landscaping and gardening	Picnic areas, golf fairways, and campsites	Playgrounds	Paved streets, airport runways, and parking areas
Carlin: Ca	Very severe: very severe flooding; low bearing capacity; very high subsidence potential.	Very severe: very severe flooding; very high subsidence potential.	Very severe: very severe flooding; high organic-matter content.	Very severe: very severe flooding.	Very severe: very severe flooding.	Very severe: very severe flooding.	Very severe: very severe flooding; poor to unsuitable subgrade material.
Commerce: Cm	Moderate: moderate wetness.	Severe: moderately slow permeability; moderate wetness.	Slight	Moderate: moderate wetness.	Moderate: moderate wetness.	Moderate: moderate wetness.	Moderate: fair subgrade material.
Cn	Moderate: moderate wetness; moderate shrink-swell potential.	Severe: moderately slow permeability; moderate wetness.	Slight	Moderate: moderate wetness; silty clay loam surface texture.	Moderate: moderate wetness; fair trafficability.	Moderate: moderate wetness; fair trafficability.	Moderate: moderate wetness; fair subgrade material.
Convent: Cr	Moderate: moderate wetness.	Moderate: moderate permeability; moderate wetness.	Moderate: moderate permeability; fair dam material.	Slight	Slight	Moderate: moderate wetness.	Moderate: fair subgrade material.
Co	Moderate: moderate wetness.	Moderate: moderate wetness.	Moderate: moderate permeability.	Slight	Slight	Moderate: moderate wetness.	Slight
*Cs. For Barbary part of Cs, see Barbary series.	Very severe: flooding.	Severe: flooding	Severe: moderate permeability and flooding.	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding
Ct. No valid estimates can be made for silty alluvial part of Ct.	Very severe: very severe flooding.	Severe: very severe flooding.	Very severe: very severe flooding.	Very severe: very severe flooding.	Severe: very severe flooding.	Severe: very severe flooding.	Severe: very severe flooding.
Maurepas: Ma	Very severe: very severe flooding and very low bearing capacity; very high subsidence potential.	Very severe: very severe flooding; very high subsidence potential.	Severe: very severe flooding; high organic-matter content; very high subsidence potential.	Very severe: very severe flooding; very high subsidence potential.	Very severe: very severe flooding; very high subsidence potential.	Very severe: very severe flooding; very high subsidence potential.	Very severe: very severe flooding; unsuitable subgrade material; very high subsidence potential.
Mhoon: Mh	Severe: low bearing capacity; severe wetness; moderate to high shrink-swell potential.	Severe: severe wetness; slow permeability.	Slight	Moderate: severe wetness; silty clay loam surface texture.	Severe: severe wetness; poor trafficability.	Severe: severe wetness; poor trafficability.	Severe: severe wetness; poor to fair subgrade material.
Sharkey: Sk	Severe: severe wetness; very high shrink-swell potential; low bearing capacity.	Severe: severe wetness; very slow permeability.	Slight	Severe: severe wetness; clayey texture.	Severe: severe wetness; poor trafficability.	Severe: severe wetness; poor trafficability.	Severe: severe wetness; poor subgrade material; difficult to work.

interpretations Continued

Factors affecting use for—				Suitability as a source of—				
Foundations for low buildings	Highway location	Land grading or shaping	Drainage	Topsoil	Highway subgrade	Highway subbase	Levee (homogeneous)	Soil cement base material
Very severe flooding; high compressibility; very low shear strength.	Very severe flooding; poor to unsuitable subgrade material.	Very severe flooding; very high subsidence potential.	Very severe flooding; very high subsidence potential.	Not suitable: organic part decomposes too rapidly.	Poor to not suitable: organic part unstable; very severe wetness.	Not suitable: organic part unstable; very severe wetness.	Poor to not suitable: organic part unstable; very severe wetness.	Not suitable: organic part decomposes.
Fair shear strength; moderate compressibility; moderate wetness.	Moderate wetness; fair traffic supporting capacity.	Moderate wetness.	Moderately slow permeability; fair slope stability.	Good	Fair: fair traffic supporting capacity; moderate wetness.	0 to 12 inches poor. 12 to 48 inches poor to not suitable: can be too plastic; moderate wetness.	Fair: fair shear strength.	Poor to very poor: farily high cement requirements.
Moderate wetness; moderate shrink-swell potential; fair shear strength; moderate compressibility.	Moderate wetness; fair traffic supporting capacity.	Moderate wetness.	Moderately slow permeability.	Fair to good: some layers have fairly high clay content.	Poor to fair: poor to fair traffic supporting capacity; moderate wetness.	Poor to not suitable: can be too plastic; moderate wetness.	Fair: fair shear strength.	Poor to very poor: high cement requirements.
Fair shear strength; moderate compressibility; moderate wetness.	Moderate wetness; fair traffic supporting capacity.	Moderate wetness.	Poor side slope stability.	Good	Fair: fair traffic supporting capacity; moderate wetness.	Poor: can be too plastic; moderate wetness.	Fair: fair shear strength.	Fair: moderate cement requirements.
Slight wetness	Moderate wetness; fair traffic supporting capacity.	Moderate wetness.	Poor side slope stability.	Good	Fair: fair traffic supporting capacity; moderate wetness.	Poor: can be too plastic; moderate wetness	Fair: fair shear strength; poor resistance to erosion.	Fair to good: moderate cement requirements.
Severe flooding and high compressibility.	Severe flooding and high compressibility.	Severe flooding	Severe flooding	Good	Fair: fair traffic supporting capacity; moderate wetness.	Poor: can be too plastic; moderate wetness.	Fair: fair shear strength; poor resistance to erosion.	Fair: moderate cement requirements.
Very severe flooding	Very severe flooding.	Very severe flooding.	Very severe flooding.	Good	Fair: fair traffic supporting capacity; moderate wetness.	Poor: can be too plastic; moderate wetness.	Fair: fair shear strength; poor resistance to erosion.	Fair: moderate cement requirements.
Very severe flooding and high compressibility; very low shear strength; very high subsidence potential.	Very severe flooding; unsuitable subgrade material; very high subsidence potential.	Very severe flooding; very high subsidence potential.	Very severe flooding; very high subsidence potential.	Poor: organic part decomposes too rapidly.	Not suitable: organic part unstable; very severe wetness.	Not suitable: organic part unstable; very severe wetness.	Not suitable: organic part unstable; very severe wetness.	Not suitable: organic part decomposes.
Severe wetness; moderate to high shrink-swell potential; fair shear strength; high compressibility.	Severe wetness; poor traffic supporting capacity.	Severe wetness; somewhat difficult to work.	Slow permeability.	Fair: fairly high clay content.	Fair to poor. fair to poor traffic supporting capacity; severe wetness.	Not suitable: material too plastic; severe wetness.	Fair fair shear strength.	Poor to very poor: fairly difficult to work; high cement requirements.
Low shear strength; very high shrink-swell potential; high compressibility; severe wetness.	Severe wetness; very poor traffic supporting capacity; poor subgrade material.	Severe wetness; difficult to work.	Very slow permeability.	Poor: high clay content.	Poor: poor traffic supporting capacity; high shrink-swell potential; severe wetness.	Not suitable: material too plastic; severe wetness.	Fair: poor shear strength; high compressibility.	Very poor to not suitable: very difficult to work; very high cement requirements.

TABLE 5.—*Engineering*

Soil series and map symbols	Degree of limitation and chief limiting factors for— Homesites	Septic tank filter fields	Sewage lagoons	Landscaping and gardening	Picnic areas, golf fairways, and campsites	Playgrounds	Paved streets, airport runways, and parking areas
Sharkey—Continued							
Sm	Very severe: flooding; severe wetness; very high shrink-swell potential; low bearing capacity.	Severe: flooding; very slow permeability; severe wetness.	Slight: severe if floodwaters are deep.	Severe: flooding; severe wetness; clayey texture.	Severe: flooding; severe wetness; poor trafficability; subject to cracking during dry periods.	Severe: flooding; severe wetness; subject to cracking during dry periods; poor trafficability.	Severe: flooding; severe wetness; poor subgrade material; difficult to work.
Sh	Severe: severe wetness; very high shrink-swell potential; low bearing capacity.	Severe: very slow permeability; severe wetness.	Slight	Severe: severe wetness; clayey texture.	Severe: severe wetness; poor trafficability; subject to cracking during dry periods.	Severe: severe wetness; poor trafficability; subject to cracking.	Severe: severe wetness; poor subgrade material; difficult to work.
Tunica: Tn	Severe: very high shrink swell potential; severe wetness; low bearing capacity.	Severe: severe wetness; very slow permeability.	Slight	Severe: severe wetness; difficult to work.	Severe: severe wetness; poor trafficability; cracking during dry periods.	Severe: severe wetness; poor trafficability; cracking during dry periods.	Severe: severe wetness; poor subgrade material; difficult to work.
Vacherie:							
Vh	Moderate: moderate wetness.	Severe: very slow permeability; moderate wetness.	Slight	Moderate: moderate wetness.	Moderate: moderate wetness.	Moderate: moderate wetness.	Moderate: poor subgrade material below a depth of 20 inches; moderate wetness.
Va	Moderate: moderate wetness.	Severe: very slow permeability; wetness.	Moderate: moderately permeable at a depth of 0 to 30 inches.	Moderate: moderate wetness.	Moderate: moderate wetness.	Moderate: moderate wetness.	Moderate: clay below a depth of 30 inches.

identified as Pt. GP and GW are clean gravel, and GM and GC are mainly gravel that includes an appreciable amount of nonplastic and plastic fines. SP and SW are clean sand. SM and SC are mainly sands but fines of silt and clay are included. ML and CL are silt and clay that have a low liquid limit, and MH and CH are silt and clay that have a high liquid limit. Soils on the borderline between two classes are designated by symbols for both classes; for example, ML–CL.

Soil scientists use the USDA textural classification (*9*). In this, the texture of the soil is determined according to the proportion of soil particles smaller than 2 millimeters in diameter; that is, the proportion of sand, silt, and clay. Textural modifiers, such as gravelly, stony, shaly, and cobbly, are used as needed.

Table 3 shows the AASHO and Unified classification of specified soils in the parishes, as determined by laboratory tests. Table 4 shows the estimated classification of all the soils in the parishes according to all three systems of classification.

Engineering test data

The Louisiana Department of Highways has tested the major layers of several soils in these parishes. The results of these tests, which were made in accordance with standard procedures, are given in table 3. The soils were sampled to a depth of about 5 feet, and the data, therefore, are not adequate for estimating the characteristics of soils to greater depth.

interpretations—Continued

Factors affecting use for—				Suitability as a source of—				
Foundations for low buildings	Highway location	Land grading or shaping	Drainage	Topsoil	Highway subgrade	Highway subbase	Levee (homogeneous)	Soil cement base material
Flooding: severe wetness; very poor traffic supporting capacity; poor subgrade material.	Flooding; severe wetness; very poor traffic supporting capacity; poor subgrade material.	Flooding; severe wetness; difficult to work.	Subject to flooding.	Poor: high clay content.	Poor. poor traffic supporting capacity; high shrink swell potential; severe wetness.	Not suitable: material too plastic; severe wetness.	Fair: poor shear strength; high compressibility.	Very poor to not suitable: very difficult to work; very high cement requirements.
Low shear strength; very high shrink swell potential; high compressibility; severe wetness.	Severe wetness; very poor traffic supporting capacity; poor subgrade material.	Severe wetness; difficult to work.	Very slow permeability.	Poor: high clay content.	Poor: poor traffic supporting capacity; high shrink-swell potential; severe wetness.	Not suitable: material too plastic; severe wetness.	Fair: poor shear strength; high compressibility.	Very poor to not suitable: very difficult to work; very high cement requirements.
Poor shear strength; very high shrink-swell potential in upper 27 inches; high compressibility.	Severe wetness: very poor traffic supporting capacity; poor subgrade material.	Severe wetness; difficult to work.	Very slow permeability.	Poor: high clay content.	0 to 27 inches poor: traffic supporting capacity; high shrink-swell potential; severe wetness. 27 to 51 inches fair.	Not suitable material too plastic; severe wetness.	Fair. poor shear strength; high compressibility.	Poor to not suitable. very difficult to work; very high cement requirements.
Poor shear strength; high compressibility below depth of 20 inches: moderate wetness.	Moderate wetness; fair traffic supporting capacity; poor subgrade material below a depth of 20 inches.	Moderate wetness; clay below a depth of 20 inches; difficult to work.	Very slow permeability.	0 to 20 inches good. 20 to 50 inches poor: high clay content.	0 to 20 inches fair. 20 to 50 inches poor: poor traffic supporting capacity; high shrink-swell potential; moderate wetness.	0 to 20 inches poor. 20 to 50 inches not suitable: material too plastic; moderate wetness.	Fair: poor to fair shear strength.	0 to 20 inches fair. 20 to 50 inches poor to not suitable: very difficult to work: very high cement requirements.
Poor shear strength; high shrink-swell potential; high compressibility below a depth of 30 inches.	Poor subgrade material below a depth of 30 inches.	Moderate wetness.	Very slow permeability below a depth of 30 inches; side slope stability.	0 to 30 inches good. 30 to 48 inches poor: high clay content.	0 to 30 inches fair. 30 to 48 inches poor: poor traffic supporting capacity; high shrink-swell potential; moderate wetness.	0 to 30 inches poor. 30 to 48 inches not suitable; material too plastic; moderate wetness.	Fair: poor to fair shear strength.	0 to 30 inches fair. 30 to 48 inches poor to not suitable: very difficult to work; very high cement requirements.

The mechanical analyses were obtained by the combined hydrometer and sieve method. The tests for liquid limit and plastic limit measure the effect of water on the consistence of the soil material. A dry, clayey soil material, for example, changes from a semisolid to a plastic state when the moisture content is increased. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the material passes from a semisolid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which the material is in a plastic state.

In construction work, engineers are concerned also with shrinkage, moisture-density data, and dispersion of soil materials. As moisture leaves a soil, the soil decreases in volume in proportion to the loss in moisture, until a point is reached where shrinkage stops, even though additional moisture is removed. The moisture content at which shrinkage stops is called the shrinkage limit. The shrinkage ratio is the volume change resulting from the drying of a soil material divided by the loss of moisture caused by drying. The ratio is expressed numerically.

Moisture-density, or compaction, data are important in earthwork for, as a rule, the soil is most stable if it is compacted to about the maximum dry density at approximately the optimum moisture content. If a dry soil material is compacted at successively higher moisture content,

assuming that the compactive effort remains constant, the density of the material will increase until the optimum moisture content is reached. After that the density decreases as the moisture content increases. The highest dry density obtained in the compaction test is termed maximum dry density, and the corresponding moisture content is the optimum moisture. A tolerance of 95 to 100 percent of maximum dry density is specified in many earthwork contracts. Therefore, the percentage of moisture of the material to be compacted can vary, provided 95 percent of maximum dry density is exceeded when the material is compacted.

Soil properties significant in engineering

Table 4 gives estimates of properties for each mapping unit delineated on the soil map at the back of this publication. These estimates were based on the results of laboratory tests shown in table 3, on tests made of similar soils in adjacent parishes, on field observations, and on the behavior of the soils in the parishes. The section "Descriptions of the Soils" gives a detailed description of each mapping unit and information about the range in characteristics and the inclusions of other soils. The column headings in table 4 that were not explained in the discussion of table 3 are explained in the following paragraphs.

Reaction refers to the degree of acidity or alkalinity of a soil and is expressed in pH values. It is defined in the Glossary.

Permeability refers to the rate at which water moves through an undisturbed soil. The estimates were based on the structure and porosity of the soils and on permeability tests of undisturbed cores of similar soils. Permeability of the underlying material in a soil controls the rate of seepage and is the major soil feature to be considered in locating sites for ponds and reservoirs. The Convent and other permeable soils generally are not suitable for ponds and reservoirs unless they are treated to reduce seepage.

Available water capacity (also termed available moisture capacity) is the capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Shrink-swell potential indicates the volume change of a soil when the moisture content changes. Much damage to building foundations, roads, and other structures is caused by the shrinking and swelling of soils as a result of alternate wetting and drying. This quality depends on the physical properties or characteristics of the soil. Sharkey clay, for example, has a very high shrink-swell potential. This soil, which is high in content of montmorillonitic clay, is very sticky when wet and develops extensive shrinkage cracks as it dries. The Barbary and similar soils that have a very high shrink-swell potential are continuously saturated and therefore never shrink or swell in their natural state. The Convent soils, which are very low in clay content, are nonplastic and have a low shrink-swell potential.

Corrosion potential refers to the risk of corrosion of untreated steel pipe as a result of physical and biochemical action. Among the factors that influence the rate of corrosion are moisture, soluble salts, electrical conductivity, acidity, texture, and drainage (*12*).

Wetness ratings are based on estimates of the length of time that free water stays in a soil after the saturation point has been reached. In this survey the wetness hazard is expressed as *slight*, *moderate*, *severe*, and *very severe*.

Flooding hazard refers to the risk of flooding as a result of stream overflow, runoff from adjacent areas, local accumulation, or windblown water from nearby lakes. Since the soils affected and the depth and duration of floods vary considerably with the severity of each rainstorm, the ratings shown in table 4 for flooding hazard are intended only for general guidance. Local records should be used for a more accurate estimate of the flooding hazard for any particular soil. The hazard is no more than *slight* for soils that are not subject to flooding or that are flooded less than once in 15 years. The hazard is *moderate* if the soil is flooded at least once in 15 years and *severe* if the soil is flooded one or more times each year. The overflow hazard is none to slight for Sharkey clay and is severe for Sharkey clay, flooded. The entire survey area is protected from flooding by a major levee system along the Mississippi River.

Subsidence potential refers to the maximum possible loss of surface elevation after an organic soil or a semifluid mineral soil is artificially drained. After drainage and air drying, the organic layers in most soils lose more than half of their original volume. Cultivation and grazing result in compaction, which causes further loss of volume. After initial subsidence of the organic layers, oxidation continues, and this results in gradual subsidence until the organic layers are oxidized. Subsidence potential ratings used are low, medium, high, and very high. Soils that have *low* subsidence potential include the mineral soils that have no potential for subsidence. Those having *medium* subsidence potential subside as much as 15 inches when drained, and those having *high* potential subside 15 to 50 inches. Soil that subsides more than 50 inches when drained has *very high* subsidence potential.

Engineering interpretations

This section is chiefly for planners, developers, builders, zoning officials, realtors, industrial developers, engineers, and other potential users of soils for purposes other than farming.

The information in this section is not intended to eliminate the need for onsite examination and testing of sites for design and construction of specific engineering works and uses. It should be used primarily in planning more detailed field investigations of soil material in place at the proposed site. The information can be used to—

1. Make plans for land use on a regional, parish, or community basis.
2. Select potential industrial, business, residential, and recreational sites.
3. Locate highways, parking areas, and airports.
4. Locate probable sources of sand, subbase material, subgrade material, and soil cement material.

5. Correlate pavement performance with kinds of soil and thus develop information that will be useful in designing and maintaining pavements.
6. Determine limitation of the soil for septic tank filter fields and lagoon type sewage disposal systems.

Some of the soil characteristics and qualities that affect use of the soils for nonfarm purposes are texture, reaction, shrink-swell potential, wetness, depth to water table, flooding hazard, bearing capacity, trafficability, shear strength, and compressibility. On the basis of these and related soil properties, soil scientists and engineers have rated the soils of the two parishes for specific nonfarm purposes. The degree of limitations and the chief limiting factors of each soil are given in table 5 for selected nonfarm uses.

Slight, moderate, severe, and very severe are the ratings used to express the degree of limitation for nonfarm uses. The rating *slight* means that the limitation is not serious and can be tolerated, or that it can be easily overcome. *Moderate* means that the limitation needs to be recognized, but it can be tolerated or can be overcome by measures that are general and practical. *Severe* indicates that the limitation must be recognized and is difficult to tolerate or to overcome. *Very severe* indicates that the limitation cannot be tolerated and that it can be overcome only by extreme measures.

The following paragraphs briefly discuss the use of soils for residential, industrial, recreational, and related nonfarm uses. The reader can obtain a better concept of the soil limitations by reading the detailed description of the mapping unit in the section "Descriptions of the Soils."

Homesites.—Ratings are made for sites for houses of two stories or less that do not have a basement but that do have a public or community sewage system available. The soil properties that most affect homesites are wetness, flooding hazard, shrink-swell potential, subsidence potential, bearing capacity, and slope.

Septic tank filter fields.—A septic tank filter field is a soil absorption system for sewage disposal. It consists of subsurface tile laid in such a way that effluent from the septic tank is distributed with reasonable uniformity into the natural soil. The ratings are based on the limitations of the soil to absorb effluent. Soil features considered in making these ratings are permeability, wetness, flooding hazard, subsidence potential, and slope. Though soils that are moderately permeable have slight or moderate limitations, contamination is a hazard if water supplies, streams, ponds, or canals are nearby and receive seepage from the filter fields.

Sewage lagoons.—A sewage lagoon is a shallow impoundment used to hold sewage for the time required for bacterial decomposition. In rating a soil for this use, suitability for two functions is considered: (1) as a vessel for the impounded area, and (2) as soil material for the dam or levee construction. Soil factors that affect sewage lagoons are permeability, slope, content of organic matter, and quality of embankment material.

Landscaping and gardening.—Factors considered for landscaping and gardening are those soil features that affect the establishment and maintenance of lawns, grasses, and ornamental plants and the production of vegetables. These factors include flooding, subsidence potential, wetness, and texture.

Picnic areas, golf fairways, campsites.—With the exception of golf fairways, suitable areas for these recreation uses should generally require very little site preparation. Soil factors used for determining degree of limitation for these uses are wetness, flooding hazard, trafficability, surface cracking, subsidence potential, and slope.

Playgrounds.—These include intensive play areas such as baseball diamonds, tennis courts, and other areas used for organized games. These areas are subject to much foot traffic and generally require a level, firm surface and good drainage. Soil factors considered in making ratings are wetness, flooding hazard, slope, trafficability, surface cracking, and subsidence potential.

Paved streets, airport runways, and parking areas.—Preferably these structures should be built without much cutting, filling, and preparation of subgrade. The properties used in evaluating soils for these uses are wetness, slope, flooding hazard, traffic supporting capacity, subgrade material, and subsidence potential.

Foundations for low buildings.—These are for buildings that have three stories or less. They include buildings used for stores, offices, warehouses, apartments, and small industries. Properties used in evaluating soils for this use are shear strength, shrink-swell potential, compressibility, piping potential, wetness, subsidence potential, and bearing capacity.

Highway location.—Factors considered for highway location are those soil features that affect performance and ease of construction. The entire profile of undisturbed soil is evaluated. Soil factors used in making ratings for this land use are wetness, erodibility, and stability of side slopes, traffic supporting capacity, flooding hazard, subgrade material, subsidence potential, and slope.

Land grading and shaping.—The rating for land grading and shaping is an estimate of the relative ease or difficulty of leveling and shaping residential or commercial lots, of cutting to grade of race tracks, and of similar handling of the soil. Soil factors used in making these ratings are wetness, slope, texture, subsidence potential, workability, and flooding hazard.

The suitability of soils as a source of topsoil, highway subgrade, highway subbase, levee (homogeneous), and soil cement are given in table 5. Each soil is placed into one of four suitability classes: good, fair, poor, and not suitable.

Soils are rated for suitability as a source of topsoil for topdressing road shoulders, embankments, homesites, or other areas that need rapid revegetation to prevent erosion or improve trafficability. Soils rated *good* have a topsoil material that responds well to management for establishing and maintaining a good turf. Soils that have a thick deposit of loamy material and are high in organic-matter content are rated good. Soils that have a thin or clayey surface layer or a seasonable high water table are rated *poor.* Organic soils are rated not suitable because the organic material decomposes rapidly. Significant deposits of sand or gravel are generally lacking in the uppermost 4 feet of the soils in the survey area.

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The suitability of a soil for subgrade (road fill) depends largely on the texture and natural water content of the soil. Very plastic soils, such as Sharkey clay, are not suitable because their natural water content is high and handling and drying are difficult. Organic soils are generally not suitable for subgrade, because they are unstable.

Subbase material that is nonplastic and of good quality generally is not available at or near the surface of the soils in the survey area. The Convent, Commerce, and other soils that contain layers that are only slightly plastic are suitable for subbase material if the material is treated with lime or soil cement additives. Good subbase material may be available below some soils at depths of more than 4 feet.

Soil characteristics considered in rating as a source of material for levees are permeability when the material is compacted and saturated, shear strength, compressibility when compacted, workability, piping potential, stability, and resistance to erosion.

The ratings of soil as a source of material for soil cement are based on the percent of cement needed to produce soil cement that will withstand freeze-thaw and wet-dry cycles without deterioration. Generally, a well-graded silty sand of which less than 35 percent passes a number 200 sieve is best. The Sharkey and other soils that have a high clay content are less desirable.

Formation and Classification of the Soils

This section describes the major factors of soil formation and some of the soil-forming processes. It defines the current system of soil classification and classifies the soils of the two parishes according to that system. This section also shows the results of analysis of selected soils in the parishes.

Factors of Soil Formation

The characteristics of each soil are determined by (1) the physical and mineralogical composition of the parent material, (2) the climate under which the soil material has accumulated and existed since accumulating, (3) the living organisms in and on the soil, (4) the topography, and (5) the length of time the forces of soil development have acted on the soil material.

Climate and living organisms are the active factors in soil formation. They act on the parent material and change it into a natural body that has genetically related horizons. The effects of climate and living organisms are conditioned by topography. Parent material also affects the kind of profile that is formed. Finally, time is essential for the changing of parent material into a soil profile.

The interrelations of the factors of soil formation are so complex that few generalizations can be made about one factor unless conditions are specified for the other four.

Living organisms

Plants affect the formation of soils on mineral parent material by developing a root system in the soil and by adding leaves and other plant parts to the soil surface. The remains of this organic material add humus to the soil after the plants die. Plant roots, though small, force openings into the soil and modify porosity. As the roots grow, they break up and rearrange the soil particles. After the plants die, the roots also form humus, which is a source of nutrients and an aid in the formation and maintenance of soil structure favorable to plant growth. Animals, such as crawfish and earthworms, also influence soil formation in the survey area by burrowing in the soil and mixing it.

The native vegetation on the natural levees and back swamps in the survey area consisted mainly of mixed southern hardwoods. Soils that formed under this kind of vegetation and that are above the elevation of flooding are low in organic-matter content. The Convent and Commerce soils are of this kind. Maurepas soils formed under similar vegetation, but Maurepas soils are continuously saturated, are very high in organic-matter content, and have a few inches to several feet of woody organic matter accumulated on the surface.

Grass vegetation influenced the soils in marshland. Organic soils build up in areas that are always or nearly always flooded. If the water level rises because of geologic subsidence, a rise in sea level, or local conditions that result in prolonged flooding, the plants are submerged and die to form peat that has a surficial zone of living plants. The organic material must remain submerged if it is to be stable. Subaerial exposure causes oxidation and dissipation of the peat.

Climate

St. James and St. John the Baptist Parishes have a humid subtropical climate, which is characteristic of areas near the Gulf of Mexico (*6*). The climate is fairly uniform throughout the parishes, and this uniformity eliminates local differences of the soils that are the result of climate. Though the climate in this area favors rapid and intense weathering, the soils on flood plains are all weakly developed because they have been exposed to the influence of climate for only a short time.

The flooded mineral or organic soils are not exposed to weathering in the same way as are the soils on natural levees. Climate does have an influence, however, because the water is generally warm enough for animal and vegetable life and a continual anaerobic decomposition of organic materials. The effects of ice and the freeze-thaw cycle are absent.

Relief

The relief in the survey area has affected drainage and has had an important influence on the formation of the soils. The Sharkey and Mhoon soils are at the lowest elevations. They receive runoff from the higher Convent and Commerce soils and therefore are more poorly drained, have a higher water table, and have a gray B horizon.

The Carlin, Allemands, and Maurepas soils developed in ponded areas that were too wet for the oxidation of the accumulating organic materials. Thus, these soils have thick organic layers.

Parent material

The parent material for mineral soils is the unconsolidated mineral mass from which soils form. The nature of the parent material determines the chemical and mineralogical composition of the soils. It also influences the degree of leaching, the reaction, texture, permeability, and drainage, and the kind and color of the surface and subsoil layers.

The natural levees in the survey area are highest near the river because the initial loss of velocity and transporting power resulted in rapid deposition of sediments as the waters spread over the streambanks. As velocity decreased, sand was dropped first, silt next, and clay last (*5*). Consequently, the soils that developed on the higher parts of the natural levees are more sandy or silty, more permeable, and better drained than the soils near the toe of these levees.

Clayey sediments in the back swamp were deposited in the interstream basins back of the natural levees. These fine-textured sediments dropped from slowly moving or still water. Some of the lower areas have thick accumulations of organic materials because the water table is high and flooding is prolonged.

Soils that formed from silty and sandy parent materials generally have a lower capacity to hold nutrients than those that formed from clay. The sandy and silty soils, however, are generally more productive because they have a more favorable plant root, air, and water relationship. The sandy and silty soils in the survey area contain a large amount of weatherable minerals that slowly release the nutrients needed for plant growth.

In St. James and St. John the Baptist Parishes, the dominant minerals in the clay fraction (less than 0.002 millimeter) are montmorillonite, illite, and vermiculite.

Woody and herbaceous plant remains are the parent materials for organic soils. These plants are generally well decomposed in the prevailing climate. The mass, except at the surface, contains few recognizable plant parts that resist disintegration when manipulated slightly. The surface layer is a mixture of living and dead organic material. Recognizable plant parts are mostly those of the current vegetation. Woody peats form in swamps, and herbaceous peats form in marshes. Because of the decomposed state, peat is not a commercial product.

Time

Time, generally long periods, is required for soils to form. The length of time that the soil-forming forces have been acting on a particular soil is reflected in the profile characteristics of that soil.

All the soils in the survey area are of Recent geologic age and have distinct to faint profile development. Commerce soils are examples that have distinct profile development. These soils retain many of the characteristics of their alkaline, loamy parent material. The distinct development is evidenced by a darkening of the A horizon by organic matter and a weakly developed B horizon. Convent soils have faint profile development and about the only evidence of age is the darkening of the surface layer by organic matter.

Processes of Soil Formation

The degree of horizonation in soils is the result of one or more of the following processes: (1) accumulation of organic matter, (2) leaching of soluble carbonates and bases, (3) reduction, solution, and transfer of iron and manganese, and (4) formation and translocation of silicate clay minerals. The older soils in these parishes have distinct horizons, and the younger soils have faint horizons.

In most soils in the survey area, two or more of these processes have influenced the development of horizons. For example, an accumulation of organic matter, the reduction and transfer of iron, and the formation of structure in the B horizon are reflected in the horizons of Commerce, Mhoon, and Sharkey soils. An accumulation of organic matter in the surface layer is about the only process reflected in the faint horizons of Convent soils.

Enough organic matter has accumulated to form an A1 horizon in all of the soils in the two parishes.

The soils in this survey area have been little affected by leaching. Though some carbonates have been removed, the soils are moderately alkaline in some horizons. In some areas, Sharkey clay is moderately alkaline throughout because the dense clay severely restricts leaching.

Mhoon, Tunica, Sharkey, and other poorly drained soils in the survey area have horizons that developed mainly through reduction, solution, and transfer of iron and manganese. In these soils, which are alternately wet and dry, the iron compounds are reduced to a soluble form and gray colors are dominant, primarily because of this reduction. If drainage is impeded or the water table is high, anaerobic microorganisms remove oxygen from the water. An oxygen deficiency results in the reduction of iron and manganese. Oxidized forms of iron and manganese are reduced to the more soluble divalent forms. Divalent iron and manganese may be leached from the soils, or they may rise to the surface of waterlogged soils and form segregated iron and manganese concretions. Iron and manganese concretions are present in some poorly drained and somewhat poorly drained soils in the survey area. Gleyed horizons are present in all of the poorly drained and very poorly drained soils.

Classification of the Soils

Classification consists of an orderly grouping of soils according to a system designed to make it easier to remember soil characteristics and interrelationships. Classification is useful in organizing and applying the results of experience and research. Soils are placed in narrow classes for discussion in detailed soil surveys and for application of knowledge within farms and fields. The many thousands of narrow classes are then grouped into progressively fewer and broader classes in successively higher categories so that information can be applied to large geographic areas.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*2*) and revised later (*8*). The system currently used by the National Cooperative Soil Survey was developed in the early sixties (*7*) and was adopted in 1965 (*10*). It is under continual study.

The current system of classification has six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great group, the subgroup, the family, and the series. The criteria for classification are soil properties that are observable or measurable, but the properties are selected so that soils of similar genesis are grouped together. The placement of some soil series in the current system of classification, particularly in families, may change as more precise information becomes available.

Table 6 shows the classification of each soil series of St. James and St. John the Baptist Parishes by family, subgroup, and order, according to the current system.

Following are brief descriptions of each of the categories in the current system.

Order.—Ten soil orders are recognized in the current system. They are Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. The properties used to differentiate the soil orders are those that tend to give broad climatic groupings of soils. Two exceptions are Entisols and Histosols, which occur in many different climates.

The three orders to which the soils in St. James and St. John the Baptist Parishes belong are Entisols, Inceptisols, and Histosols.

Entisols are mineral soils that formed either in recent alluvium or in older material consisting of almost pure quartz sand. They have little horizon development.

Inceptisols are mineral soils that formed in young but not recent material. They lack well-defined horizons, but they have a slight accumulation of organic matter in the surface layer and weak subangular blocky structure in the B2 horizon.

Histosols are soils that formed from organic material. They have a thick, highly organic surface horizon. In the two parishes, they are in the broad, low areas of swamp and marsh that are saturated to the surface.

Suborder.—Each order is divided into suborders, primarily on the basis of soil characteristics that produce classes having genetic similarity. A suborder has a narrower climatic range than an order. The criteria for suborders reflect either the presence or absence of waterlogging or differences in climate or vegetation.

Great Group.—Each suborder is divided into great groups on the basis of uniformity in the kind of sequence of genetic horizons.

Subgroup.—Each great group is divided into subgroups, one representing the central (typic) segment of the group, and others, called intergrades, made up of soils that have mostly properties of one great group but also one or more properties of another great group.

Family.—Families are established within each subgroup, primarily on the basis of properties important to plant growth. Some of these properties are texture, mineralogy, reaction, soil temperature, permeability, consistence, and thickness of horizons.

Series.—The series has the narrowest range of characteristics of the categories in the classification system. It is explained in the section "How This Survey Was Made."

A detailed description of each soil series in the two parishes is given in the section "Descriptions of the Soils."

Laboratory Data

Selected physical and chemical properties from representative soils at selected sites in St. James and St. John the Baptist Parish are shown in table 7. The soils are Allemands mucky peat, Carlin peat, Commerce silty clay loam, Convent silt loam, Maurepas muck, Sharkey clay, and Sharkey clay, frequently flooded. Determinations of the Allemands mucky peat, Carlin peat, and Maurepas muck were made by Dr. Robert Grossman, Soil Survey, Soil Conservation Service. Dr. A. G. Caldwell, professor of agronomy, Louisiana State University, made the determinations of Commerce silty clay loam, Convent silt loam, Sharkey clay, and Sharkey clay, frequently flooded.

Methods of Sampling and Analysis

Samples were taken from pits at carefully selected locations. For methods used, see Soil Survey Investigations Report No. 1 (*11*). Measurements reported were calculated on oven-dry basis. A modification of the Bouyoucos hydrometer procedure without treatment of samples to destroy organic matter and concretions was used to determine particle-size distribution. Extractable bases were determined on original ammonium acetate extracts by using a Beckman DU flame spectrophotometer. Moisture content at one-third bar tension was determined on natural clods by using a pressure plate. The moisture content at 15 bar tension was determined on sieved samples by using a pressure membrane. Bulk density was determined on clods equilibrated by absorption at 30 centimeters of water tension (approximate field capacity). The triethanolamine method was used to determine extractable acidity. The cation exchange capacity was determined by direct distillation of absorbed ammonia. Organic carbon was determined by wet combustion, using a modification of the Walkley-Black method. The pH measurement was made by glass electrode on a 1:1 soil-water mixture. The Bray strong acid method was used in determining the available phosphorus.

Interpretation of Soil Characterization Data [4]

The soils tested of St. James and St. John the Baptist Parishes are slightly acid to moderately alkaline. Convent silt loam, developed most recently, is moderately alkaline. Its profile is about 3 percent carbonates. All four soils tested are well supplied with exchangeable calcium and magnesium. The Convent and Commerce soils are high in exchangeable potassium but may respond to additional potassium when crops are grown that require more potassium. Because Sharkey soils are very high in potassium, crops on them do not respond to applications of a potassium fertilizer. All four soils contain considerable amounts of exchangeable sodium but not enough to interfere with plant growth. The frequently flooded Sharkey soils contain more than twice as much sodium as other Sharkey soils; low-lying soils are not readily leached. The difference in sodium

[4] By A. G. CALDWELL, professor of agronomy, Louisiana State University.

TABLE 6.—*Soil series classified according to the current system of classification*

Series	Family	Subgroup	Order
Allemands	Clayey, montmorillonitic, euic, thermic	Terric Medisaprists	Histosols.
Barbary	Very fine, montmorillonitic, nonacid, thermic	Typic Hydraquent	Entisols.
Carlin	Euic, thermic	Hydric Medhemists	Histosols.
Commerce	Fine-silty, mixed, nonacid, thermic	Aeric Fluvaquents	Entisols.
Convent	Coarse-silty, mixed, nonacid, thermic	Aeric Fluvaquents	Entisols.
Convent: sandy variant.	Coarse-loamy, mixed, nonacid, thermic	Aeric Fluvaquents	Entisols.
Maurepas	Euic, thermic	Typic Medisaprists	Histosols.
Mhoon	Fine-silty, mixed, nonacid, thermic	Typic Fluvaquents	Entisols.
Sharkey	Very fine, montmorillonitic, nonacid, thermic	Vertic Haplaquepts	Inceptisols.
Tunica	Clayey over loamy, montmorillonitic, nonacid, thermic	Vertic Haplaquepts	Inceptisols.
Vacherie	Coarse-silty over clayey, mixed, nonacid, thermic	Aeric Fluvaquents	Entisols.
Vacherie: sandy variant.	Coarse-loamy over clayey, mixed, nonacid, thermic	Aeric Fluvaquents	Entisols.

content is the most significant difference among these soils. The four soils have a good supply of extractable phosphorus.

Data on Allemands mucky peat and Carlin peat show that these soils are very high in organic carbon. The high water content at 15 bar tension is attributed to the very high organic-matter content.

In addition to the data in table 7, the Soil Conservation Service Soil Survey Laboratory at Lincoln, Nebr., determined the water content at 15 bar tension of a mucky clay A horizon of Barbary muck. Water content at 15 bar tension was determined on field moist samples as received. Then samples were air dried, rewet, and water content at 15 bar tension was measured. Water content at 15 bar tension of the field moist sample before air drying was 66.5 percent and after air drying and rewetting, it was 30.5 percent. This phenomenon is attributed to deposition of soil material under water and is evidence that it has never dried since deposition. If drained, the soils would be expected to shrink irreversibly to some degree, form cracks, and undergo a reduction of surface elevation.

General Nature of the Area

St. James and St. John the Baptist Parishes were established in 1807 by the Orleans Territorial Legislature. Before 1807, they were part of the territory of Orleans, which had 19 parishes.

For many years the productive natural levee of the Mississippi River has been intensively farmed. The limited production of hardwood and cypress timber in the extensive swamps is of minor importance. Recently, industrialization has expanded rapidly and local farming has decreased.

Each of the two parishes is dissected by the Mississippi River. Connecting the two sides is a toll ferry at Lutcher and a toll bridge near the northern boundary of St. James Parish.

The largest towns in the survey area are Laplace, Lutcher, and Gramercy. In 1960, Laplace had a population of 3,541, Lutcher 3,274, and Gramercy 2,094. Most of the remaining people live in a nearly continuous row of houses that parallels the river and in a few other settlements. The total population of the survey area was about 30,195 in 1950, and 36,808 according to the 1960 census. In 1960 the farm population was 1,500.

Physiography

St. James and St. John the Baptist Parishes are in the recent, level and nearly level Mississippi River deltaic plain. The river flows in an easterly direction and dissects each parish. The survey area consists of a low natural levee on each side of the river and broad depressed swamps and marshes.

The natural levees, which are protected from flooding by manmade levees, are typically wedge shaped in cross section. Average width is about 2 to 3 miles. The natural levees are as much as about 20 feet above sea level near the river, but they slope gradually to about 5 feet near the swamps. The content of sand and silt is typically highest near the crest of the levees. Clay content is highest in the slight depressions and at the toe of the natural levee near the back swamps. The extent of cleared soils closely approximates limits of the natural levees. Slopes on the natural levees are typically less than 1 percent, and relief is as much as 15 feet. The natural levees drain away from the river into the back swamps by a manmade gravity drainage system.

The swamps and marshes consist of semifluid, alluvial clays and organic accumulations. They occupy the broad, low, interlevee basins on each side of the river. These areas are flooded during most of the year by local rains or by water that is blown from adjacent lakes by prevailing winds. Though ponded, the swamps are gradually drained by sluggish canals and bayous. On the east side of the river, drainage is into Lake Maurepas and Lake Pontchartrain. Drainage is into Lac Des Allemands on the west side of the river. High water levels and gradual subsidence have facilitated the accumulation of organic materials to a depth of several feet in parts of the area.

Full flow of the Mississippi River through the survey area is estimated to have occurred about 700 years ago. As a result of this flow, the natural levees were increased in height and width when thin sheets of water

TABLE 7.—*Physical*

[Lack of data indicates

Soils and sample number	Horizon	Depth from surface	Particle-size distribution: Sand (2.0–0.05 mm.)	Particle-size distribution: Silt (0.05–0.002 mm.)	Particle-size distribution: Clay (<0.002 mm.)	Water content at tension of—: 1/3 bar	Water content at tension of—: 15 bar
		In.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Allemands mucky peat: S68LA-48-7[1]	Oa1	9–21	----	----	----	----	72.8
	Oa2	21–33	----	----	----	----	80.5
Carlin peat: S68LA-48-5[1]	Oe1	12–20	----	----	----	----	63.8
	Oe3	30–60	----	----	----	----	71.3
Commerce silty clay loam: S67LA-47-1[2]	Ap1	0–6	12.6	59.9	27.5	27.4	13.7
	Ap2	6–12	9.8	62.8	27.4	33.1	14.4
	B21g	12–21	6.8	63.9	29.3	36.0	----
	B22g	21–30	7.3	64.1	28.6	36.4	19.0
	B31g	30–36	9.4	67.9	22.7	33.4	13.9
	B32g	36–44	6.1	62.7	31.2	38.4	16.2
	C2g	44–50	3.5	62.2	34.3	42.5	19.9
Convent silt loam: S67LA-48-1[2]	Ap1	0–4	13.2	73.3	13.5	23.1	6.9
	Ap2	4–10	10.6	74.4	15.0	25.4	7.6
	C1	10–19	16.1	71.6	12.3	15.7	6.3
	C2	19–23	11.8	76.2	12.0	24.0	6.8
	C3	23 36	24.4	67.5	8.1	11.7	4.8
	C4	36–39	15.8	74.3	9.9	16.8	5.7
	C5	39–44	21.3	70.6	8.1	15.8	4.9
	C6	44–48	29.2	63.0	7.8	10.5	4.2
	C7	48–53	26.9	66.8	6.3	9.5	4.0
	C8	53–63	36.1	54.5	9.4	13.9	5.2
	C9	63–70	65.9	29.5	4.6	4.7	3.2
Maurepas muck: S68LA-48-6[1]	Oa2	8–20	----	----	----	----	94.1
	Oa3	20–30	----	----	----	----	108.0
Sharkey clay: S67LA-48-3[2]	Ap1	0–3	2.5	36.8	60.7	47.5	32.5
	Ap2	3–7	4.2	34.4	61.4	50.8	40.0
	B21g	7–15	3.2	34.7	62.1	49.3	39.4
	B22g	15–27	2.7	29.7	67.6	49.7	39.7
	B3g	27–42	3.2	32.6	64.2	51.6	41.2
	Cg	42–52	2.0	33.4	64.6	51.3	40.0
Sharkey clay, frequently flooded: S67LA-48-2[2]	Ap	0–3	0.02	26.9	72.9	66.0	46.0
	B21g	3–16	0.0	25.2	74.8	54.5	44.3
	B22g	16–29	0.01	23.1	76.8	57.3	46.6
	B3g	29–40	0.01	24.2	75.7	57.4	45.1
	C1g	40–48	0.0	13.0	87.0	62.0	50.1
	C2g	48–60	0.0	9.5	90.5	64.4	51.0

[1] Analyzed by the Soil Survey Laboratory, Soil Conservation Service, Lincoln, Nebr.

and chemical data

analyses were not made]

	Extractable bases (meq./100 gms. of soil)									
Bulk density	Ca	Mg	K	Na	Extractable acidity	Cation exchange capacity NH_4OAc	Organic carbon	Reaction (soil-water ratio of 1:1)	Base saturation NH_4OAc	Available phosphorus
Gm./cc.					*Meq./100 grams of soil*	*Meq./100 grams of soil*	*Pct.*	*pH*	*Pct.*	*P.p.m.*
----	----	----	----	----	----	----	26.7	----	----	----
----	----	----	----	----	----	----	29.3	----	----	----
----	----	----	----	----	----	----	33.9	----	----	----
----	----	----	----	----	----	----	28.5	----	----	----
----	10.0	5.0	0.5	0.4	4.2	20.7	0.79	6.4	77	220
1.69	10.2	5.3	0.4	0.4	4.3	22.1	0.65	6.6	74	205
1.57	12.3	6.6	0.4	0.5	3.0	24.1	0.38	7.5	----	230
1.63	12.0	7.4	0.5	0.5	2.5	23.4	0.32	7.8	----	250
1.62	10.2	6.2	0.4	0.5	2.1	19.3	0.48	7.8	----	315
1.56	12.1	7.2	0.5	0.6	3.2	25.1	0.71	7.3	----	285
----	13.5	8.0	0.6	0.6	3.6	28.3	0.80	7.6	----	280
----	----	3.7	0.4	0.4	----	12.6	0.81	8.0	----	191
1.57	----	4.2	0.4	0.5	----	12.8	0.58	8.2	----	169
1.49	----	3.2	0.3	0.5	----	10.6	0.24	8.2	----	183
1.46	----	3.0	0.3	0.4	----	11.5	0.22	8.3	----	183
1.43	----	2.2	0.3	0.3	----	8.5	0.12	8.3	----	210
1.55	----	2.3	0.3	0.3	----	9.2	0.15	8.3	----	212
1.47	----	2.1	0.3	0.3	----	8.7	0.13	8.3	----	212
----	----	1.8	0.3	0.3	----	7.2	0.12	8.3	----	252
----	----	1.7	0.3	0.3	----	6.8	0.08	8.3	----	235
1.45	----	2.0	0.3	0.3	----	8.2	0.18	8.4	----	212
1.53	----	1.2	0.2	0.3	----	5.2	0.06	8.2	----	256
----	----	----	----	----	----	----	30.9	----	----	----
----	----	----	----	----	----	----	36.5	----	----	----
----	20.3	9.5	1.2	0.4	5.7	42.6	1.66	6.8	74	210
1.30	21.2	9.5	1.0	0.5	5.0	41.1	1.10	7.0	78	180
1.16	21.0	9.9	0.9	0.5	4.8	42.2	1.07	7.3	----	180
1.23	20.0	10.0	0.9	0.6	4.7	41.3	0.93	7.2	----	170
1.08	19.9	10.2	0.9	0.7	4.8	42.3	0.85	7.3	----	175
1.11	21.4	10.2	0.9	0.7	5.0	42.1	1.02	7.3	----	170
----	30.0	11.2	1.3	1.0	10.0	60.4	6.43	6.6	74	146
1.14	22.0	11.2	1.2	1.8	5.1	45.1	0.73	7.2	----	155
1.16	21.1	11.4	1.2	1.9	5.2	46.4	0.80	7.2	----	168
1.10	21.6	11.2	1.3	1.8	4.8	42.4	0.54	7.3	----	196
1.02	23.8	11.4	1.4	1.7	4.8	46.0	0.45	7.4	----	192
1.04	24.2	12.6	1.4	1.8	5.7	50.8	1.30	7.1	----	161

[2] Analyzed by the Louisiana State University Experiment Station.

frequently deposited sediment in long stretches of the levee. The increased height of levees resulted in a decrease in the number of crevasses but greatly increased their size. Artificial levees were completed as far north as Baton Rouge by 1812, and this greatly raised the elevation of the average flood crest. Consequently, the water in crevasses became much more violent because of the greatly increased gradient between the crest of the levee and the level of the back swamp (*6*).

The average crevasse breached the artificial levee for a distance of 500 to 1,000 feet and scoured to a depth of about 12 feet. One of the largest crevasses to occur between New Orleans and Baton Rouge was on the Nita Plantation in St. James Parish on March 13, 1890. The break reached a width of about 3,000 feet (*6*).

One of the locations most favorable for crevassing was on the east bank of the river at Laplace, where 12 crevasses occurred. The water in the crevasses scoured to a maximum width of 5,300 feet and to a maximum depth of 52.7 feet. Several other crevasses on both sides of the river have resulted in considerable scouring and deposition.

Farming

The total number of farms in the survey area has decreased from 516 in 1920 to 327 in 1964, according to the U.S. Census (*3*, *4*). The total land in farms increased from 85,934 in 1919 to 99,880 in 1964. The average size of farms increased from about 170 acres in 1919 to about 300 acres in 1964.

In 1964, sugarcane was the dominant crop, and 34,678 acres was harvested for sugar. In addition, there were 9,371 acres of pasture, 1,522 acres of rice, 1,238 acres of commercial vegetables, and 647 acres of corn. In 1964, there were 6,632 head of beef cattle including calves. A total of 55,472 acres was used as cropland in the two parishes. Average sugarcane yields increased from about 20 tons per acre in 1939 to about 24.4 tons in 1964.

Climate [5]

The climate of these parishes is warm and subtropical. It is influenced in large degree by the nearness of the Gulf of Mexico and the many lakes and streams. These large water surfaces moderate temperature and its changes. During most of the year, southerly winds prevail and impart to the survey area the characteristics of a maritime climate. Table 8 is a summary of temperature and precipitation data.

The high moisture content of maritime tropical air is favorable for the frequent abundant cloudiness and daytime thunderstorm activity. Summer maximum temperatures are fairly uniform and are 90° F. or higher on about 75 percent of the days in June, July, and August. They rarely exceed 100°. The highest temperature of record at Reserve was 107° in June 1918 and July 1917.

Winters are generally mild and have temperatures dropping to 32° or lower on an average of only 14 days per year. Weather is variable in winter as warm, moist tropical air and cool, dry polar air alternate in the area. Cold spells seldom last for more than 3 or 4 consecutive days. The lowest temperature of record at Reserve was 13° January 12, 1962. The mean annual temperature is about 68.3°.

Table 9 gives the dates of the probabilities of the last low temperatures in spring and the first in fall. All data is calculated from the records at Reserve in St. John the Baptist Parish.

At Reserve, the temperature was measured in a standard Weather Bureau instrument shelter, in which the thermometer was 4½ feet above the ground. On clear calm nights, the temperature at shelter level usually is several degrees warmer than the air near to the ground. Under these conditions, frost can form on vegetation at ground level, even though temperature in the shelter is above 32°. For this reason, and because temperature even though above freezing can damage vegetation or seeds in beds, probabilities for 36° and 40° temperatures are included. These data are based on 37 years of record, 1931–67, and have been adjusted, where necessary, for years not having temperatures as low as the indicated threshold. These data are applicable to most of the parish.

Precipitation during the cooler season results mainly from activity along the boundary between warm and cold air fronts or in cyclonic storms developing over the Gulf of Mexico or the Southern States. The mean annual precipitation of 60.8 inches is well distributed through the year and usually is sufficient for the growth of many kinds of crops; October and November are the only months that have an average of less than 4 inches of moisture. Precipitation may, however, be deficient or excessive in some years. One of the driest years of record was 1938, when precipitation was 38.37 inches. One of the wettest years of record was in 1926, when precipitation was 84.26 inches. The heaviest recorded rainfall in 24 hours at Reserve was 8.20 inches on April 25, 1953.

Snowfall is rare and of minor importance in this area. At Reserve in the period 1931–67, less than one-half day had a snow cover of more than 1 inch. The snow cover was 2 inches on that day, which was in February.

Hail is unusual in this area and occurs mostly in spring and fall when thunderstorms are most intense. Damaging hailstones of large size fall only when the storms are extreme and in only a few places cover more than a few square miles.

Relative humidity in St. James and St. John the Baptist Parishes is consistently high throughout the year; the average is about 75 percent. Relative humidity usually is higher at night when the temperature is lower. From October through April, relative humidity may fall to less than 25 percent after an influx of cool continental air.

Heavy fog is more frequent in the fall and winter than in other seasons. The formation of river fog is favored much of the time between December and May because the waters of the Mississippi River are colder than the air temperature. The extensive swamp and lake areas in the survey area and surrounding parishes provide abundant moisture for the formation of fog.

[5] By George W. Cry, climatologist for Louisiana, National Weather Service, U.S. Department of Commerce.

TABLE 8.—*Temperature and precipitation*

[All data from Reserve, St. John the Baptist Parish, for the period 1931–67]

Month	Temperature				Precipitation		
	Mean daily maximum	Mean daily minimum	Two years in 10 will have at least 4 days with—		Mean monthly total	One year in 10 will have—	
			Maximum equal to or higher than—	Minimum equal to or lower than—		Less than—	More than—
	°F.	°F.	°F.	°F.	In.	In.	In.
January	63	43	77	26	4. 9	1. 8	8. 6
February	66	45	79	31	5. 4	1. 6	12. 2
March	71	50	82	36	5. 3	1. 3	9. 9
April	78	58	86	45	4. 5	1. 2	8. 0
May	85	65	92	55	4. 7	0. 9	8. 9
June	90	71	96	65	5. 2	1. 5	9. 6
July	91	73	97	69	6. 8	3. 7	10. 0
August	91	73	97	69	5. 8	1. 8	11. 0
September	88	69	95	60	5. 6	2. 2	12. 1
October	81	59	89	45	2. 9	0. 3	7. 1
November	71	49	83	34	3. 9	0. 6	9. 2
December	64	44	77	29	5. 8	2. 5	10. 8
Year	[1] 78	[2] 58	99	24	60. 8	43. 5	76. 0

[1] Mean annual highest temperature. [2] Mean annual lowest temperature.

TABLE 9.—*Probabilities of last low temperatures in spring and first in fall*

[All data from Reserve, St. John the Baptist Parish]

Probability	Dates for given probability at temperature of—				
	24° F. or lower	28° F. or lower	32° F. or lower	36° F. or lower	40° F. or lower
Spring:					
1 year in 10 later than	January 25	February 23	March 10	March 29	April 8.
2 years in 10 later than	January 20	February 14	March 1	March 22	April 2.
5 years in 10 later than	January 10	January 30	February 13	March 9	March 23.
Fall:					
1 year in 10 earlier than	December 21	November 30	November 7	November 3	October 22.
2 years in 10 earlier than	December 24	December 6	November 14	November 9	October 28.
5 years in 10 earlier than	December 29	December 18	November 27	November 20	November 8.

In addition, smoke from man's activities contribute to the formation and duration of heavy fogs. Away from the river, ground fog usually forms late at night and early in the morning but sometimes lasts throughout the day. This is common late in fall and early in spring.

Tropical storms or hurricanes have occurred in the survey area once or twice in every 3 to 7 years. The high winds in these storms may spread the waters of the lakes adjacent to St. James and St. John the Baptist Parishes over large areas of the swamps, and heavy rainfall may flood other low areas. Almost half of the hurricanes affecting Louisiana have occurred during September. Many tropical storms and hurricanes have only increased cloudiness and precipitation in the survey area. Occasionally, local windstorms associated with thunderstorms may also damage property over a small area.

Water Supply

The Mississippi River supplies the survey area with an abundant water supply for both residential and industrial use. Several high-capacity water treatment plants in the area convert the Mississippi River water into potable water.

Ground water suitable for drinking is not generally available in large supply in St. James Parish. In the sands and gravels, water is in moderate supply but contains objectionable quantities of iron in solution.

An undetermined quantity of fresh ground water is present in parts of St. John the Baptist Parish at depths of 500 to 900 feet. In the lower parts of some water-bearing sands, however, this water is saline.

Several large lakes in the survey area are potential sources of water of varying quality. Lake Maurepas has a surface area of about 100 square miles and contains 540,000 acre-feet of water. Lake Pontchartrain has about 600 square miles of surface area and contains about 4,600,000 acre-feet of water. Lac Des Allemands in the southern part of St. John the Baptist Parish has about 79,000 acre-feet of water. These lakes provide excellent recreation and an economically important source of sea food.

Industries and Natural Resources

In 1968, St. James Parish led the State of Louisiana in rate of industrial development. The 74-mile river front provides numerous deep water ports, an ample water supply, and high protected natural levees. The location of the survey area in relation to New Orleans and Baton Rouge is resulting in a shift to an industrial economy.

Petroleum, chemicals, aluminum, and sugar industries are of major importance in the survey area. Many productive oil and gas fields occur throughout the two parishes.

Wood products are harvested from about 180,000 acres of forest land. Also, there is some commercial trapping and crawfish production. Fish, crabs, and shrimp are also important.

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Glossary

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Crevasse. A channel cut where water has been diverted from the main riverbed and around obstructions in the river channel.

Drainage class (natural). Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time, and in Podzolic soils commonly have mottlings below 6 to 16 inches, in the lower A horizon and in the B and C horizons.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has been allowed to drain away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. It may be limited either by the infiltration capacity of the soil or by the rate at which water is applied to the surface soil.

Marsh. Periodically wet or continually flooded areas. Surface not deeply submerged. Covered dominantly with grasses, sedges, cattails, rushes, or other water-tolerant plants.

Mottling, soil. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: Abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Munsell notation. A system for designating color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with a hue of 10YR, a value of 6, and a chroma of 4.

Natural levee. A low, ridgelike deposit immediately adjacent to the stream channel. It forms from the coarser and heavier material carried by floodwater and deposited when the velocity of the water was checked as it left the river channel and spread over the flood plain. The height of the levee generally indicates the difference in stage level between ordinary floods and low water. The average levee is slightly more than a mile wide and less than 15 feet high. It slopes downward from the river's edge to the back swamp areas at an average rate of 3 or 4 feet per mile.

Parent material. Disintegrated and partly weathered rock from which soil has formed.

Permeability. The quality of a soil horizon that enables water or air to move through it. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

pH value. A numerical means for designating relatively weak acidity and alkalinity in soils. A pH value of 7.0 indicates precise neutrality; a higher value, alkalinity; and a lower value, acidity.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline.	9.1 and higher

Relief. The elevation or inequalities of a land surface, considered collectively.

Sand. Individual rock or mineral fragments in soils having diameters ranging from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Soil variant. A soil having properties sufficiently different from those other known soils to suggest establishing a new soil series, but a soil of such limited known area that creation of a new series is not believed to be justified.

Split ditch. A lateral ditch used in the sugarcane system of surface land drainage in Louisiana. The ditches are usually parallel and are spaced 100 to 250 feet apart; the rows of sugarcane are parallel to the ditches.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Swamp. Any naturally wooded area, all or most of which is covered with water most of the time.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil. A presumed fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. The suitability of the soils for crops and pasture, wildlife, and woodland is defined in the description of each mapping unit. The capability classification system is described on pages 22 and 23. For general information about use of the soils as woodland and wildlife habitat, refer to the sections "Woodland" and "Wildlife." Other information is given in tables as follows:

Acreage and extent, table 1, page 6.
Estimated yields, table 2, page 23.

Engineering uses of soils, tables 3, 4, and 5, pages 26 through 33.

Map symbol	Mapping unit	Described on page	Capability unit Symbol
Am	Allemands mucky peat	6	VIIw-1
Ba	Barbary association	8	VIIw-2
Ca	Carlin peat	9	VIIIw-1
Cm	Commerce silt loam	9	IIw-3
Cn	Commerce silty clay loam	11	IIw-1
Co	Convent fine sandy loam, sandy variant	12	IIw-3
Cr	Convent complex	12	IIw-3
Cs	Convent and Barbary soils, frequently flooded	13	Vw-1
Ct	Convent soils and Silty alluvial land, frequently flooded	13	Vw-2
Ma	Maurepas association	14	VIIIw-1
Mh	Mhoon silty clay loam	15	IIw-1
Sh	Sharkey silty clay loam	17	IIIw-2
Sk	Sharkey clay	17	IIIw-1
Sm	Sharkey association, frequently flooded	18	Vw-3
Tn	Tunica clay	19	IIIw-1
Va	Vacherie fine sandy loam, sandy variant	20	IIw-2
Vh	Vacherie silt loam	21	IIw-2

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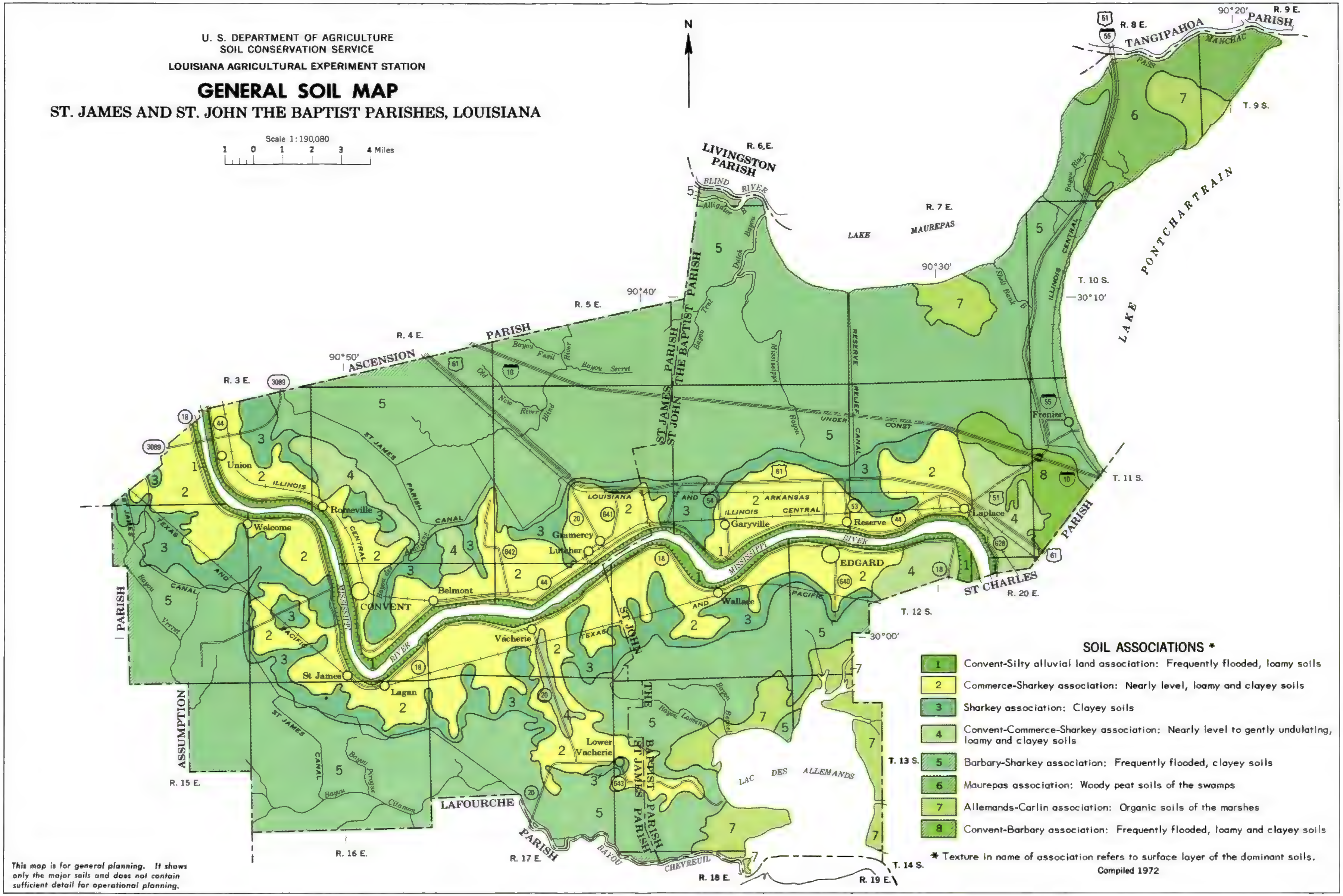
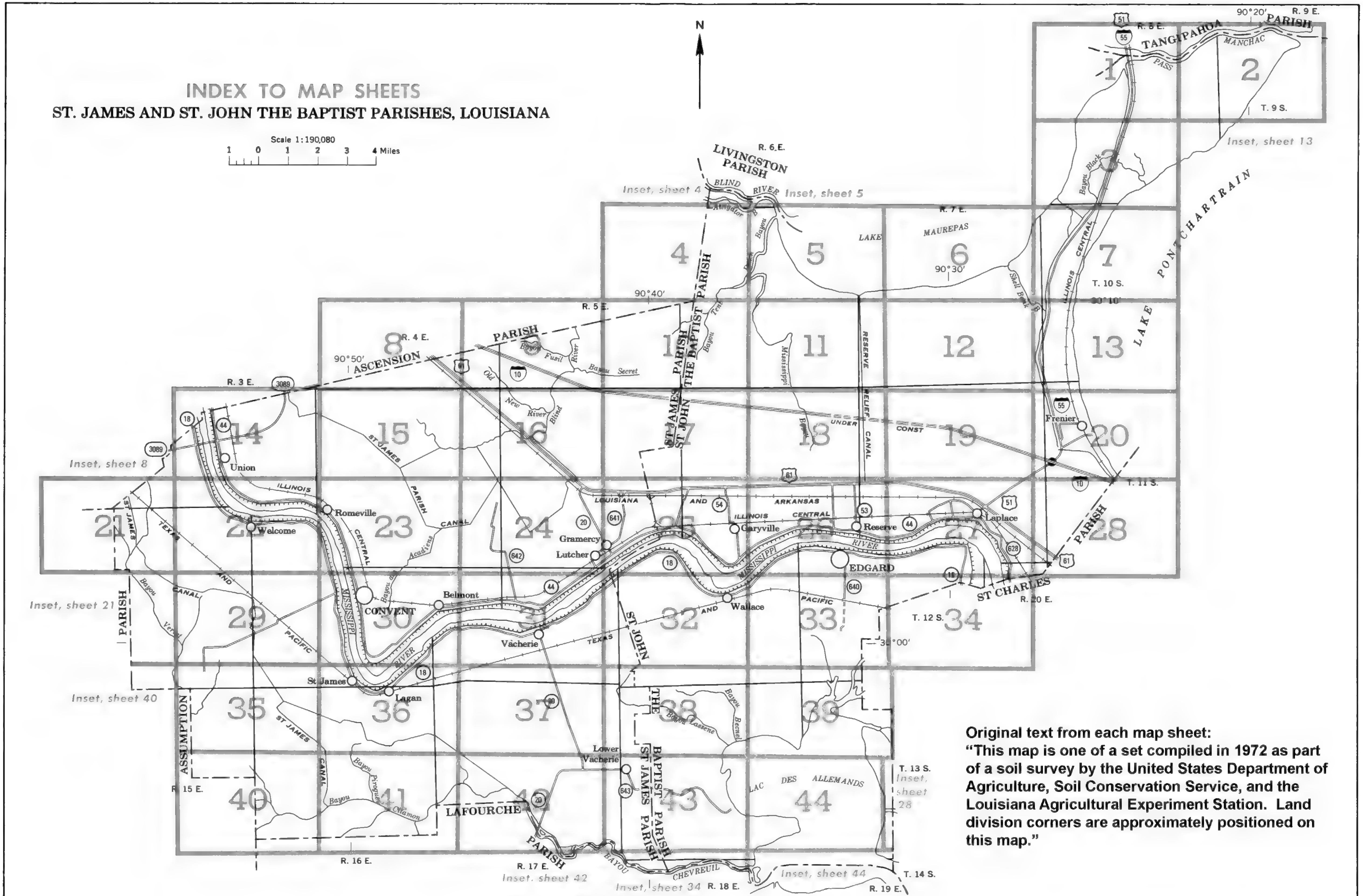

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
LOUISIANA AGRICULTURAL EXPERIMENT STATION
GENERAL SOIL MAP
ST. JAMES AND ST. JOHN THE BAPTIST PARISHES, LOUISIANA
Scale 1:190,080
1 0 1 2 3 4 Miles
N
SOIL ASSOCIATIONS *
1 Convent-Silty alluvial land association: Frequently flooded, loamy soils
2 Commerce-Sharkey association: Nearly level, loamy and clayey soils
3 Sharkey association: Clayey soils
4 Convent-Commerce-Sharkey association: Nearly level to gently undulating, loamy and clayey soils
5 Barbary-Sharkey association: Frequently flooded, clayey soils
6 Maurepas association: Woody peat soils of the swamps
7 Allemands-Carlin association: Organic soils of the marshes
8 Convent-Barbary association: Frequently flooded, loamy and clayey soils
* Texture in name of association refers to surface layer of the dominant soils.
Compiled 1972
This map is for general planning. It shows only the major soils and does not contain sufficient detail for operational planning.
LIVINGSTON PARISH
TANGIPAHOA PARISH
ASCENSION PARISH
ST JAMES PARISH
ST JOHN THE BAPTIST PARISH
ST CHARLES PARISH
LAFOURCHE PARISH
ASSUMPTION PARISH
LAKE MAUREPAS
LAKE PONTCHARTRAIN
LAC DES ALLEMANDS
MISSISSIPPI RIVER
BLIND RIVER
BAYOU CHEVREUIL
MANCHAC PASS
Union
Romeville
Welcome
Convent
Belmont
Lutcher
Gramercy
Garyville
Reserve
Laplace
Frenier
Edgard
Wallace
Vacherie
St James
Lagan
Lower Vacherie
R. 3 E.
R. 4 E.
R. 5 E.
R. 6 E.
R. 7 E.
R. 8 E.
R. 9 E.
R. 15 E.
R. 16 E.
R. 17 E.
R. 18 E.
R. 19 E.
R. 20 E.
T. 9 S.
T. 10 S.
T. 11 S.
T. 12 S.
T. 13 S.
T. 14 S.
90°50′
90°40′
90°30′
90°20′
30°10′
30°00′

INDEX TO MAP SHEETS

ST. JAMES AND ST. JOHN THE BAPTIST PARISHES, LOUISIANA



Original text from each map sheet:
"This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Louisiana Agricultural Experiment Station. Land division corners are approximately positioned on this map."

SOIL LEGEND

SYMBOL	NAME
Am	Allemands mucky peat
Ba	Barbary association *
Ca	Carlin peat
Cm	Commerce silt loam
Cn	Commerce silty clay loam
Co	Convent fine sandy loam, sandy variant
Cr	Convent complex
Cs	Convent and Barbary soils, frequently flooded *
Ct	Convent soils and Silty alluvial land, frequently flooded *
Ma	Maurepas association *
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Sk	Sharkey clay
Sm	Sharkey association, frequently flooded *
Tn	Tunica clay
Va	Vacherie fine sandy loam, sandy variant
Vh	Vacherie silt loam

* The composition of these mapping units is not as well known as that of other units in the survey area, but has been controlled well enough for the expected use of the soils.

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Divided
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State or county

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail
- Railroad
- Ferry (FY)
- Ford (FORD)
- Grade
- R. R. over
- R. R. under

Tunnel

Buildings
- School
- Church

Mine and quarry

Gravel pit

Borrow pit (B.P.)

Pipeline

Cemetery

Dams

Levee

Tanks

Well, oil or gas

Forest fire or lookout station

Indian mound

BOUNDARIES

- National or state
- County
- Minor civil division
- Reservation
- Land grant
- Small park, cemetery, airport
- Land survey division corners

DRAINAGE

Streams, double-line
- Perennial
- Intermittent

Streams, single-line
- Perennial
- Intermittent
  - Crossable with tillage implements
  - Not crossable with tillage implements
  - Unclassified

Canals and ditches

Lakes and ponds
- Perennial (water, w)
- Intermittent (int)

Spring

Marsh or swamp

Wet spot

Drainage end or alluvial fan

RELIEF

Escarpments
- Bedrock
- Other

Prominent peak

Depressions (Large, Small)
- Crossable with tillage implements
- Not crossable with tillage implements
- Contains water most of the time

SOIL SURVEY DATA

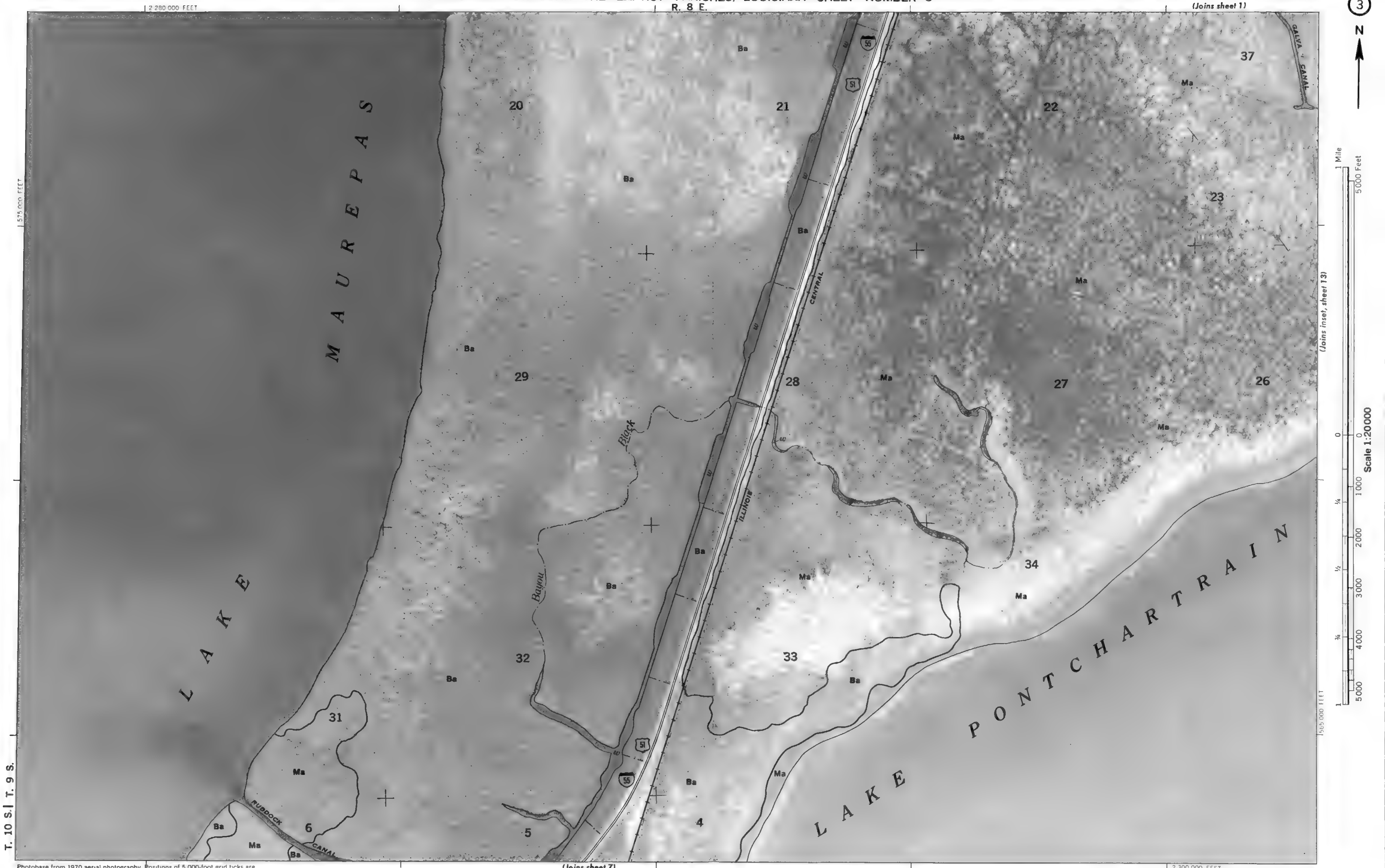
- Soil boundary and symbol (Dx)
- Gravel
- Stoniness: Stony; Very stony
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gully

ST. JAMES AND ST. JOHN THE BAPTIST PARISHES, LOUISIANA—SHEET NUMBER 1

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone

② ST. JAMES AND ST. JOHN THE BAPTIST PARISHES LOUISIANA—SHEET NUMBER 2

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.



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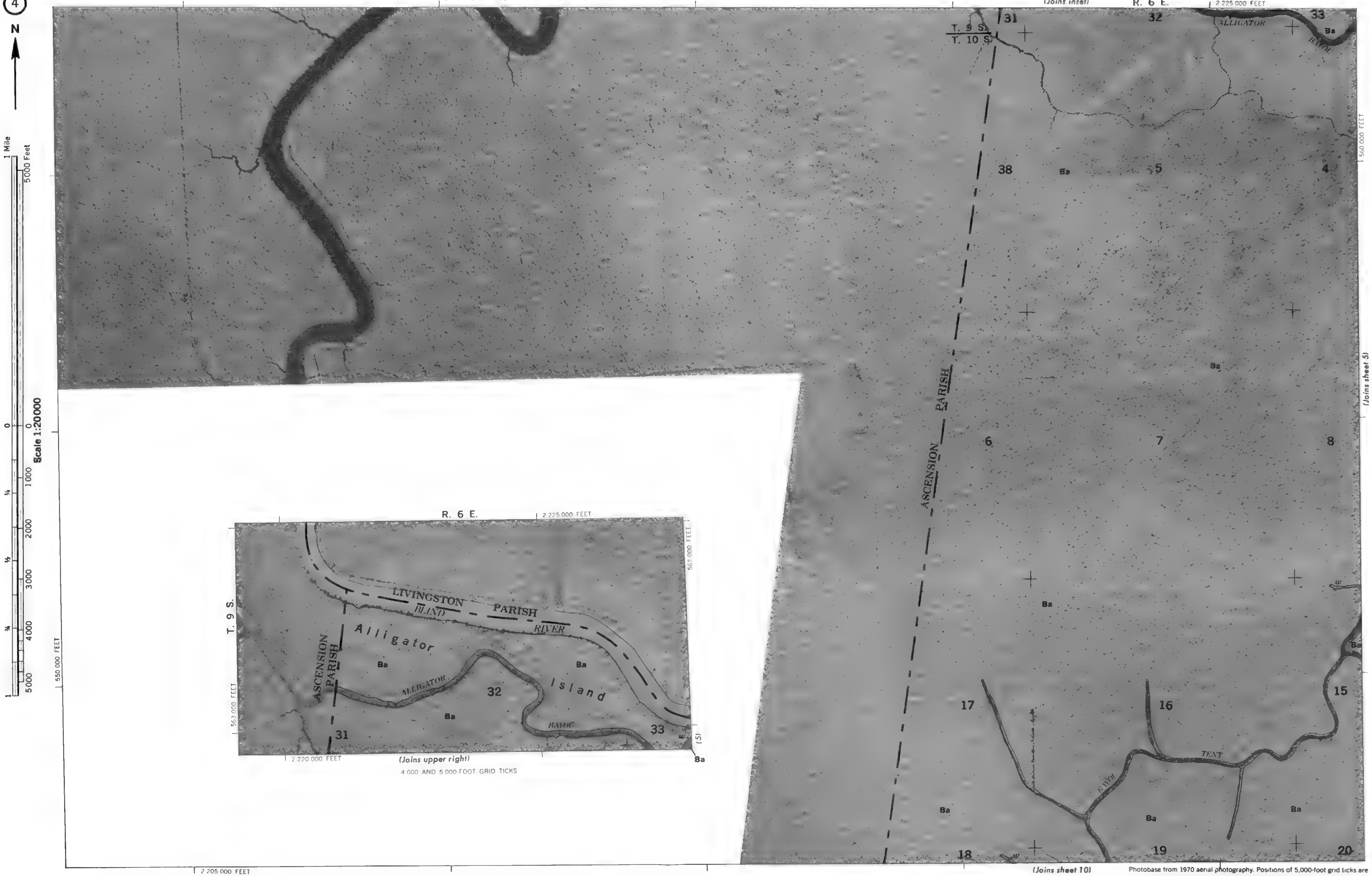

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.


5
N
(Joins inset)
2 230 000 FEET
T. 10 S. | T. 9 S.
ALLIGATOR BAYOU
BLIND RIVER
LIVINGSTON PARISH
INDEFINITE BOUNDARY
DUTCH BAYOU
MISSISSIPPI BAYOU
LAKE MAUREPAS
CANAL
560 000 FEET
550 000 FEET
(Joins sheet 4)
(Joins sheet 11)
(Joins 6)
R. 6 E. | R. 7 E.
2 250 000 FEET
R. 6 E.
2 229 000 FEET
567 000 FEET
LIVINGSTON PARISH
BLIND RIVER
T. 9 S.
(4)
(Joins upper left)
2 234 000 FEET
4 000 AND 5 000-FOOT GRID TICKS
1 Mile
5000 Feet
Scale 1:20000
Ba
33
34
4
3
9
8
15
14
13
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18
19
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21
22
23

ST. JAMES AND ST. JOHN THE BAPTIST PARISHES LOUISIANA—SHEET NUMBER 6

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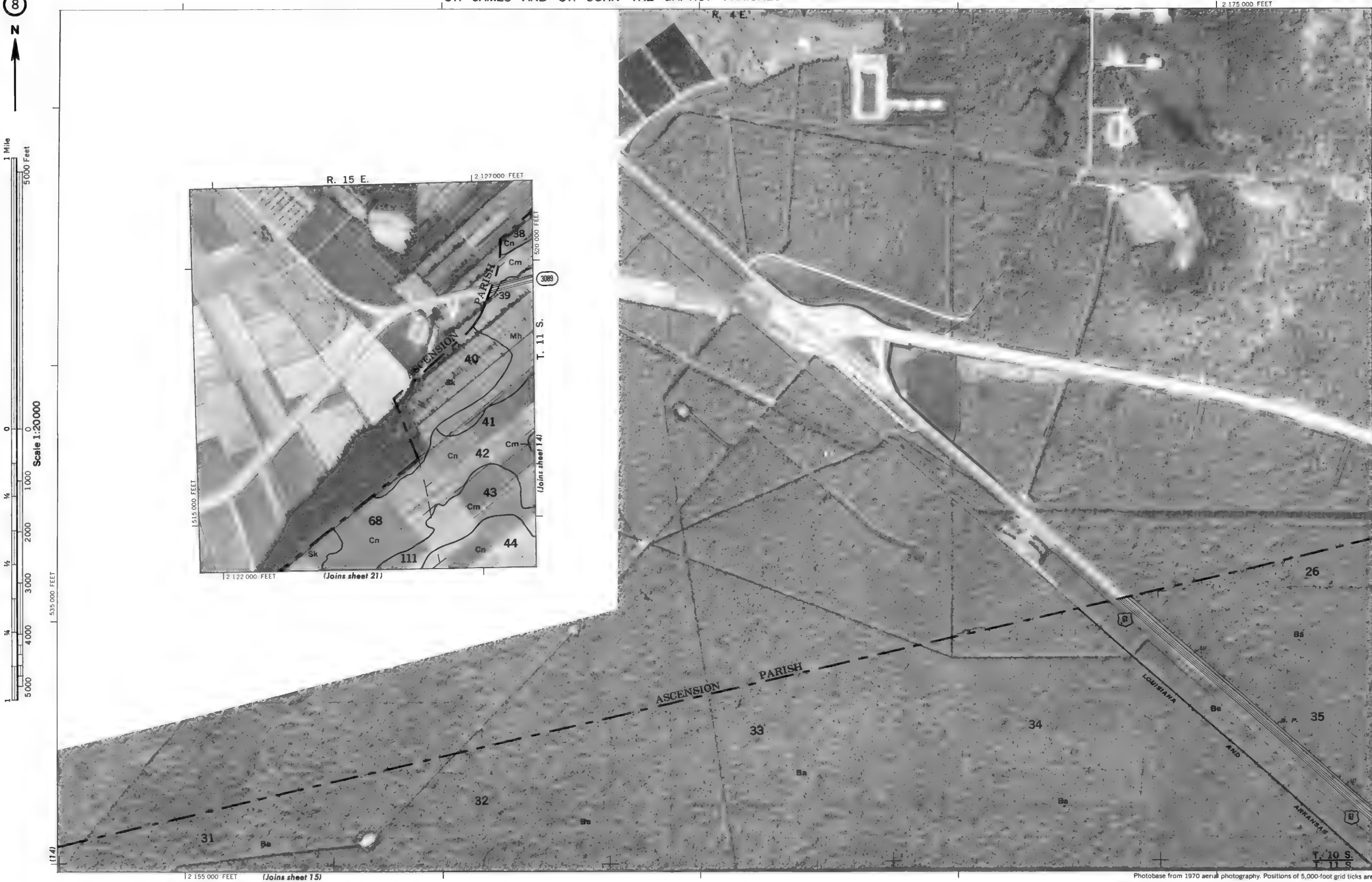
Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone



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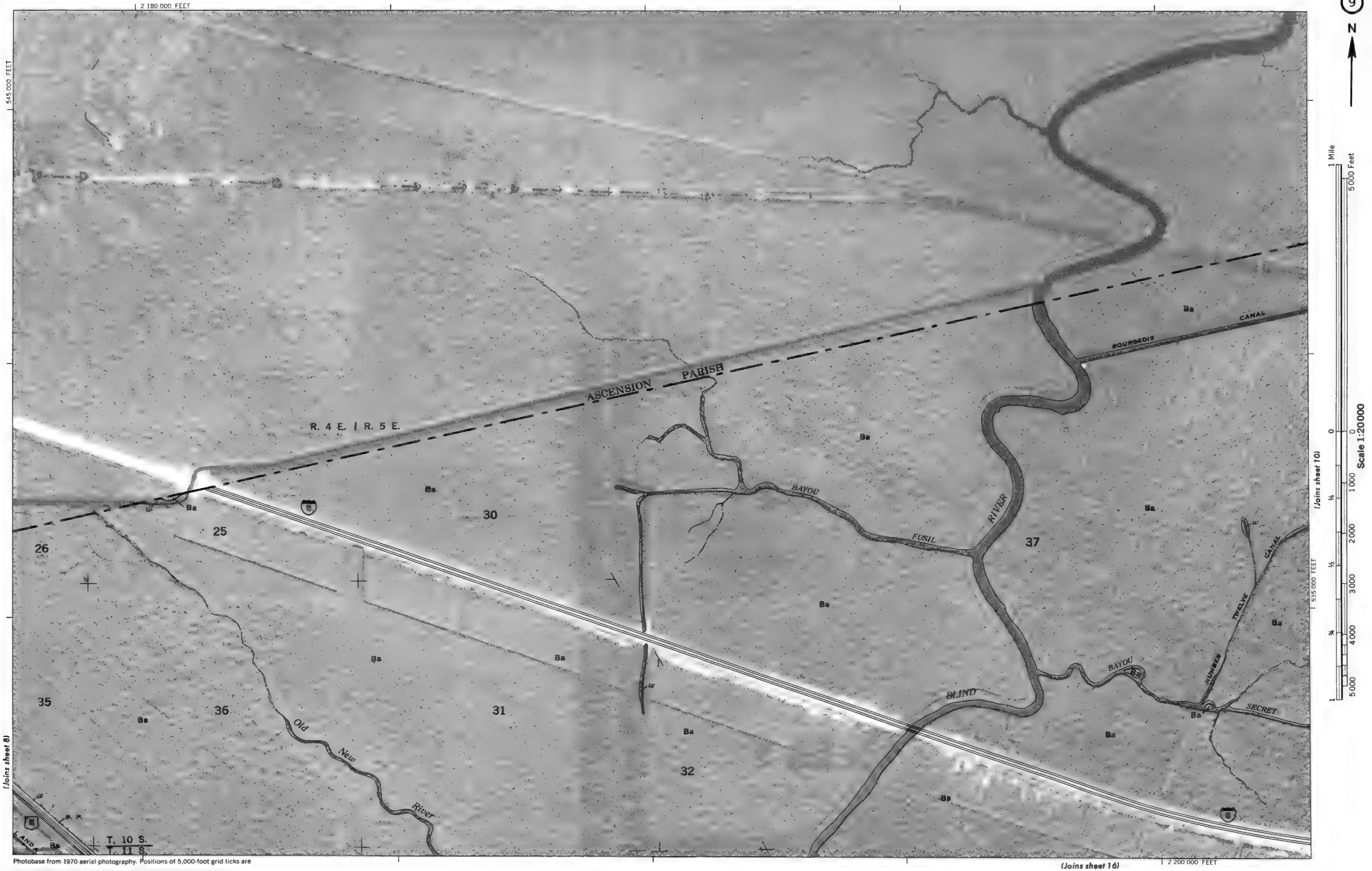

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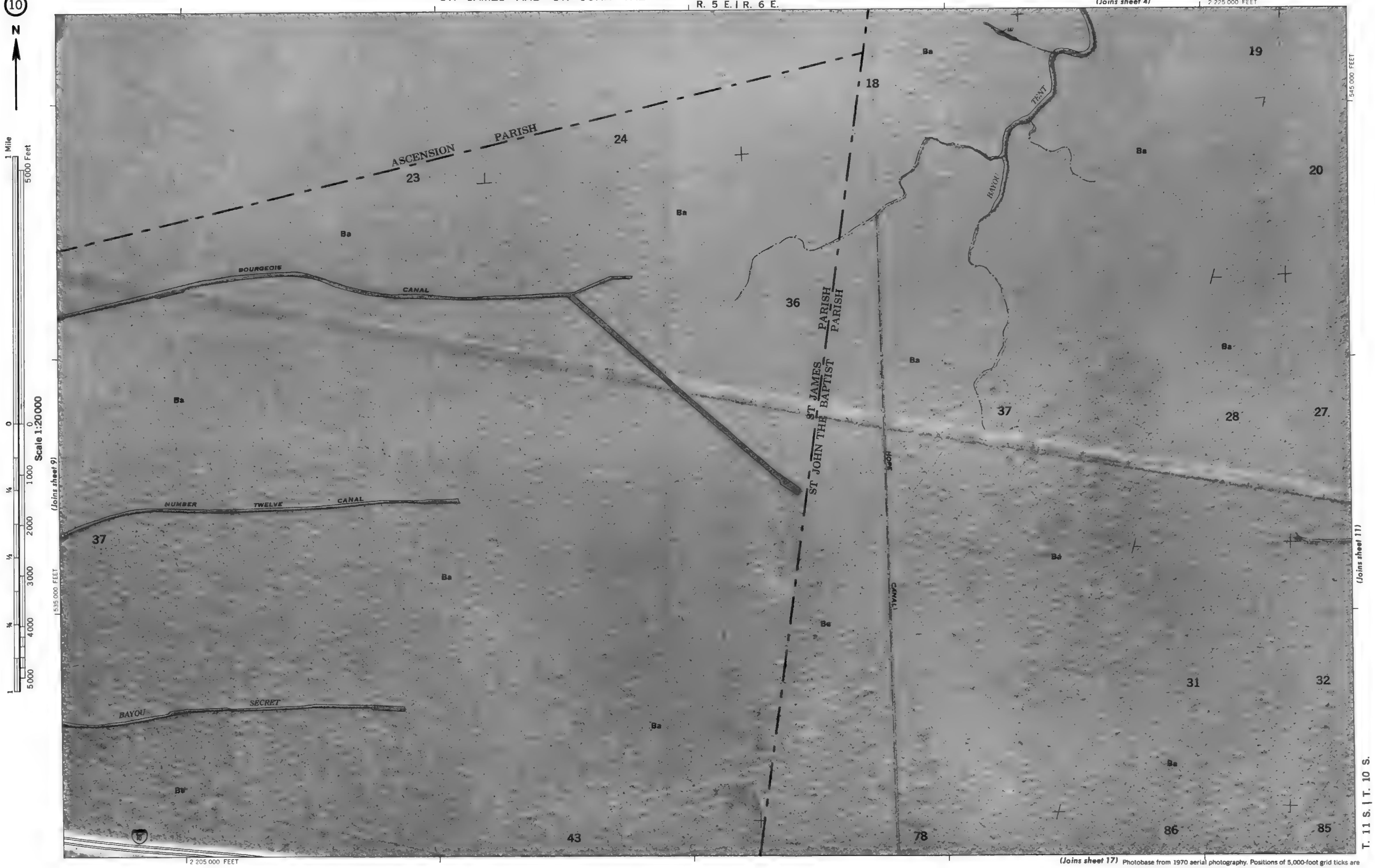

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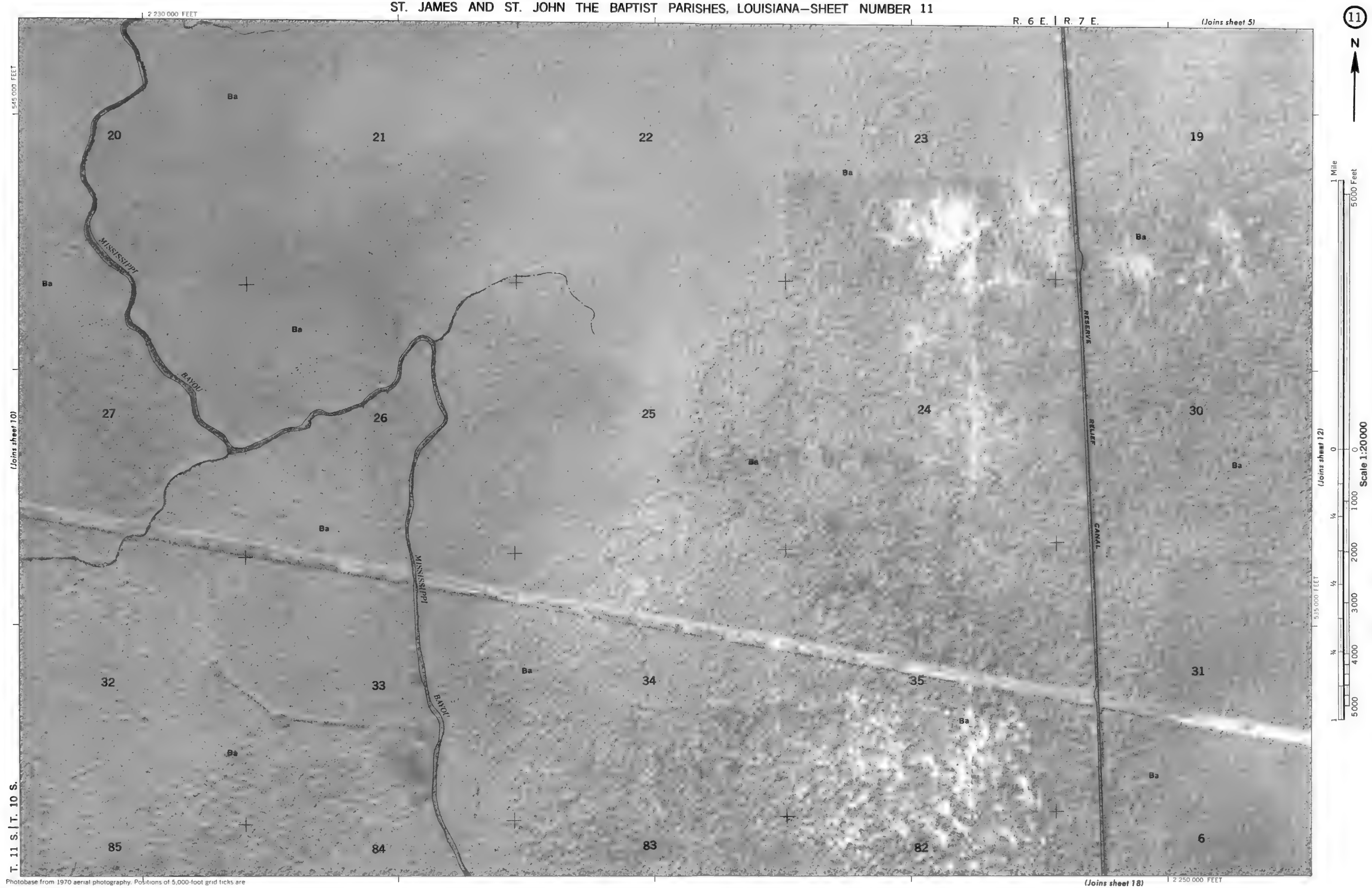

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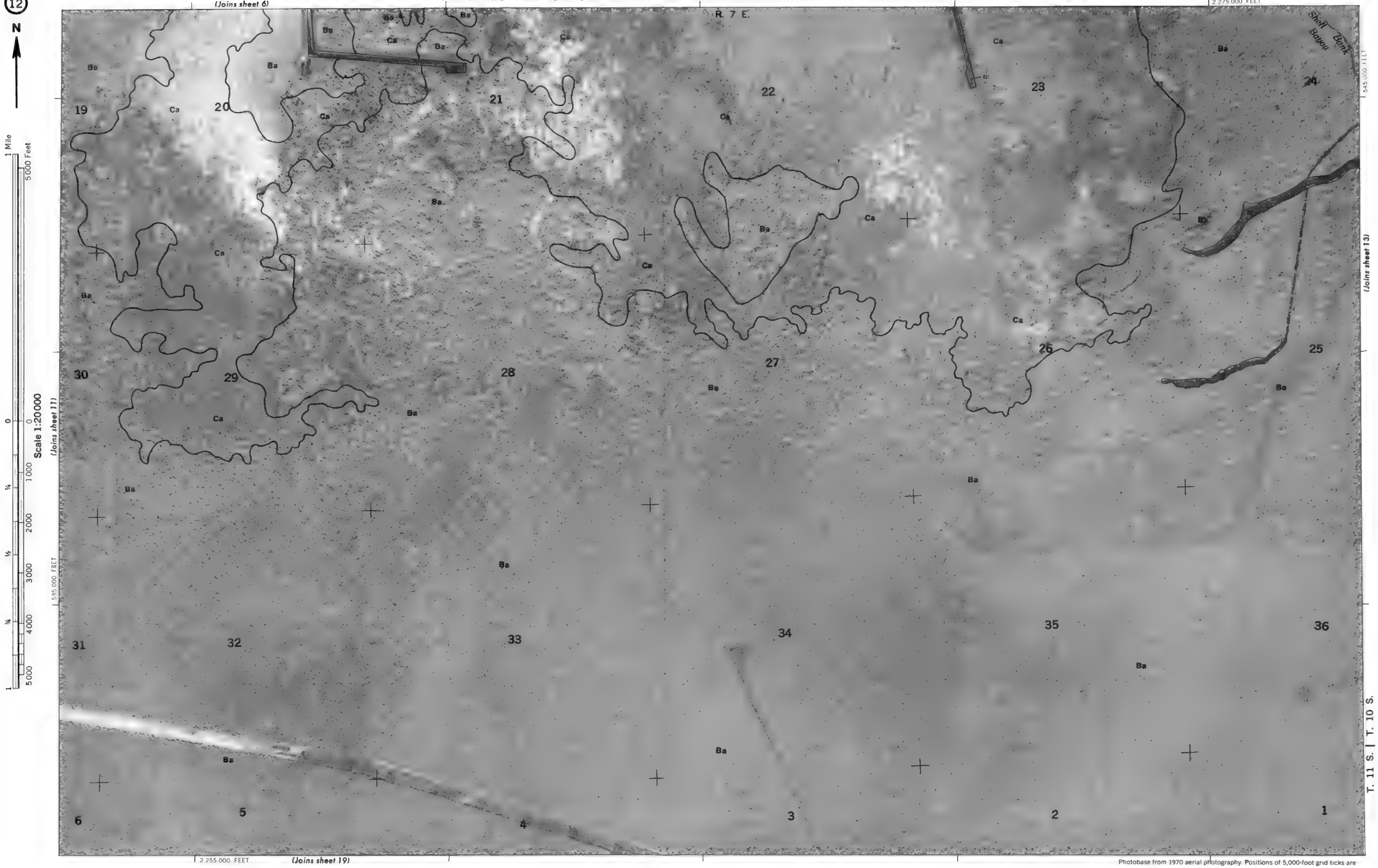

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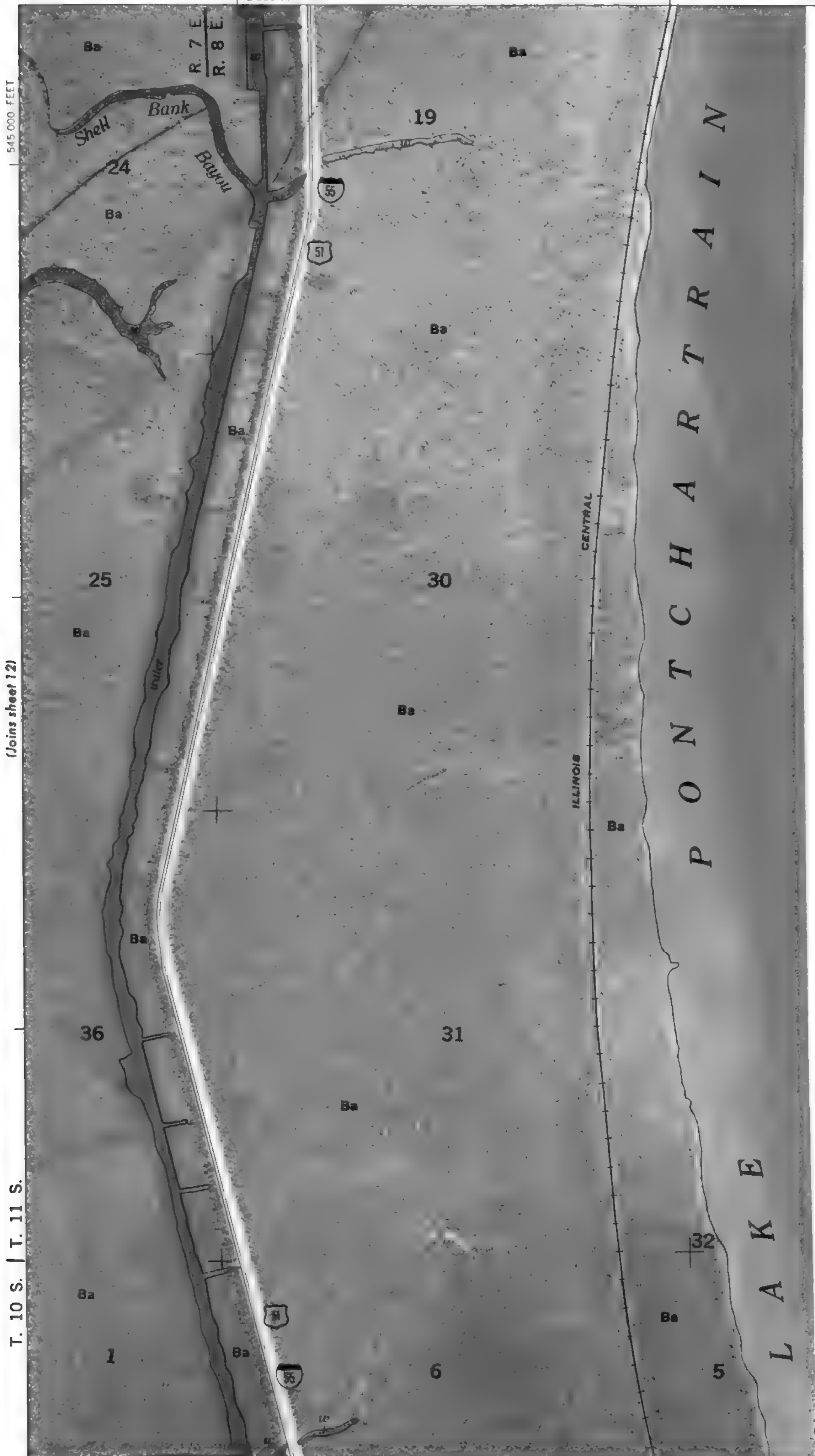

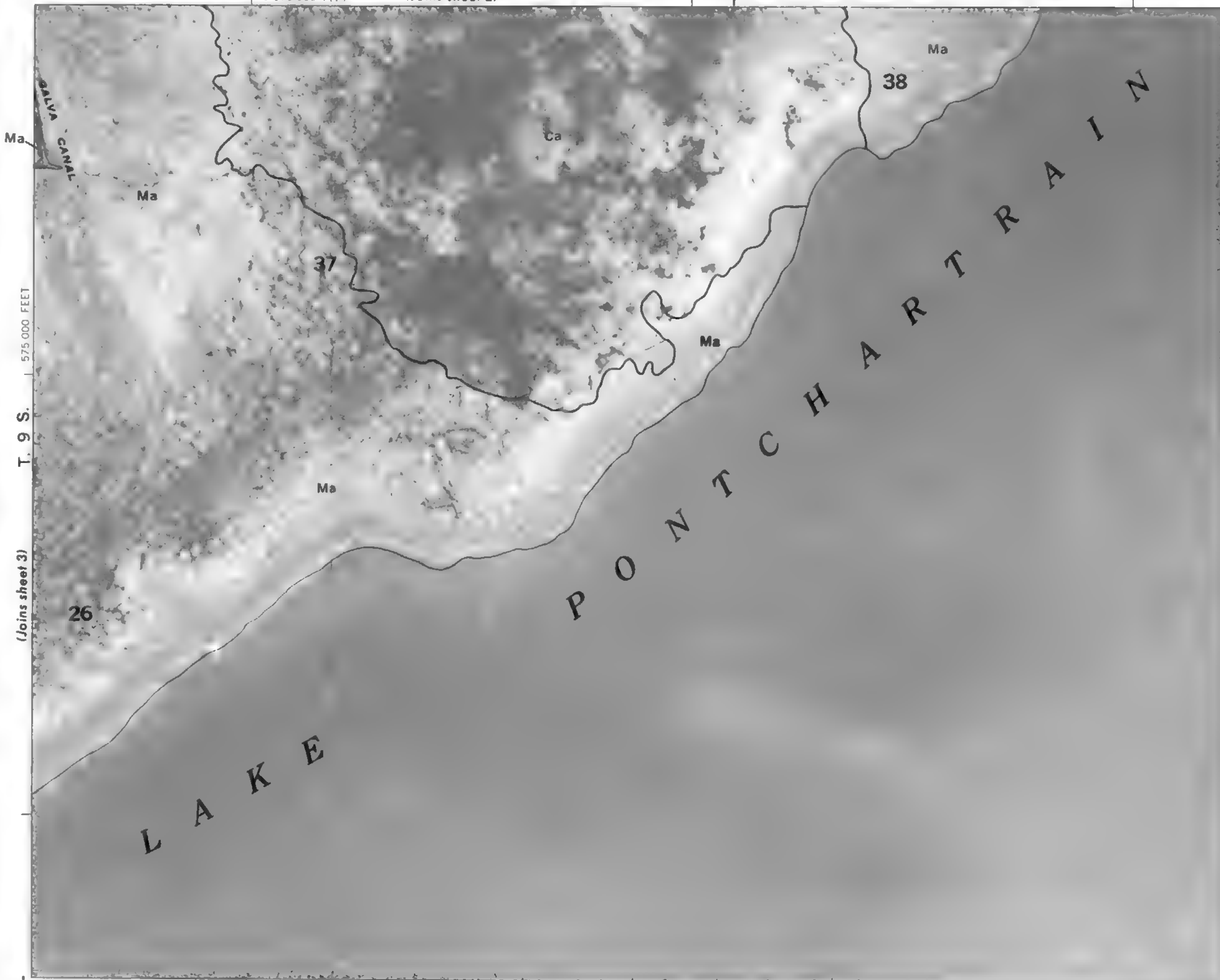

535 000 FEET

2 300 000 FEET

Scale 1:20000

1 Mile; 0, ¼, ½, ¾, 1

5000 Feet; 0, 1000, 2000, 3000, 4000, 5000

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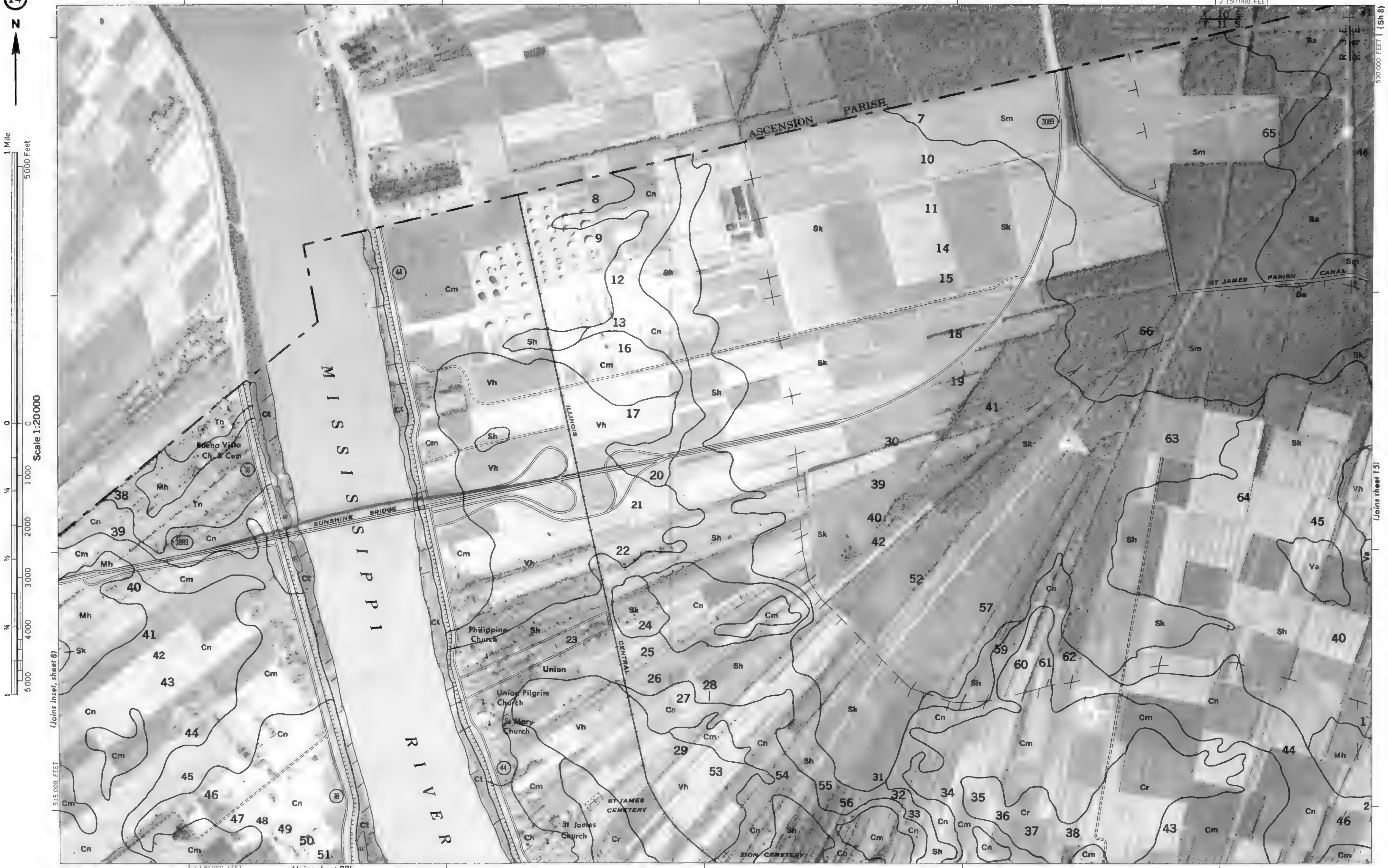

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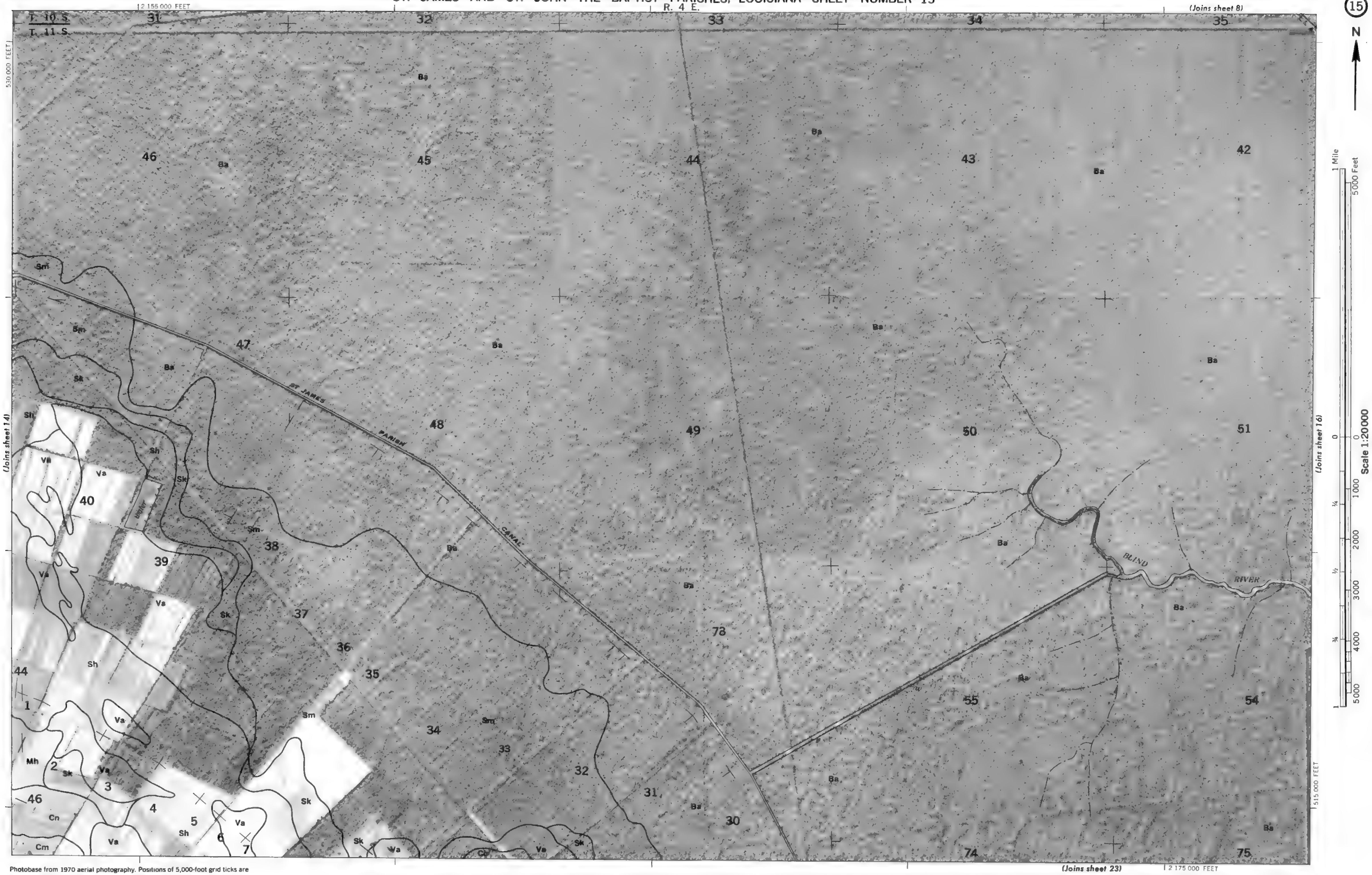

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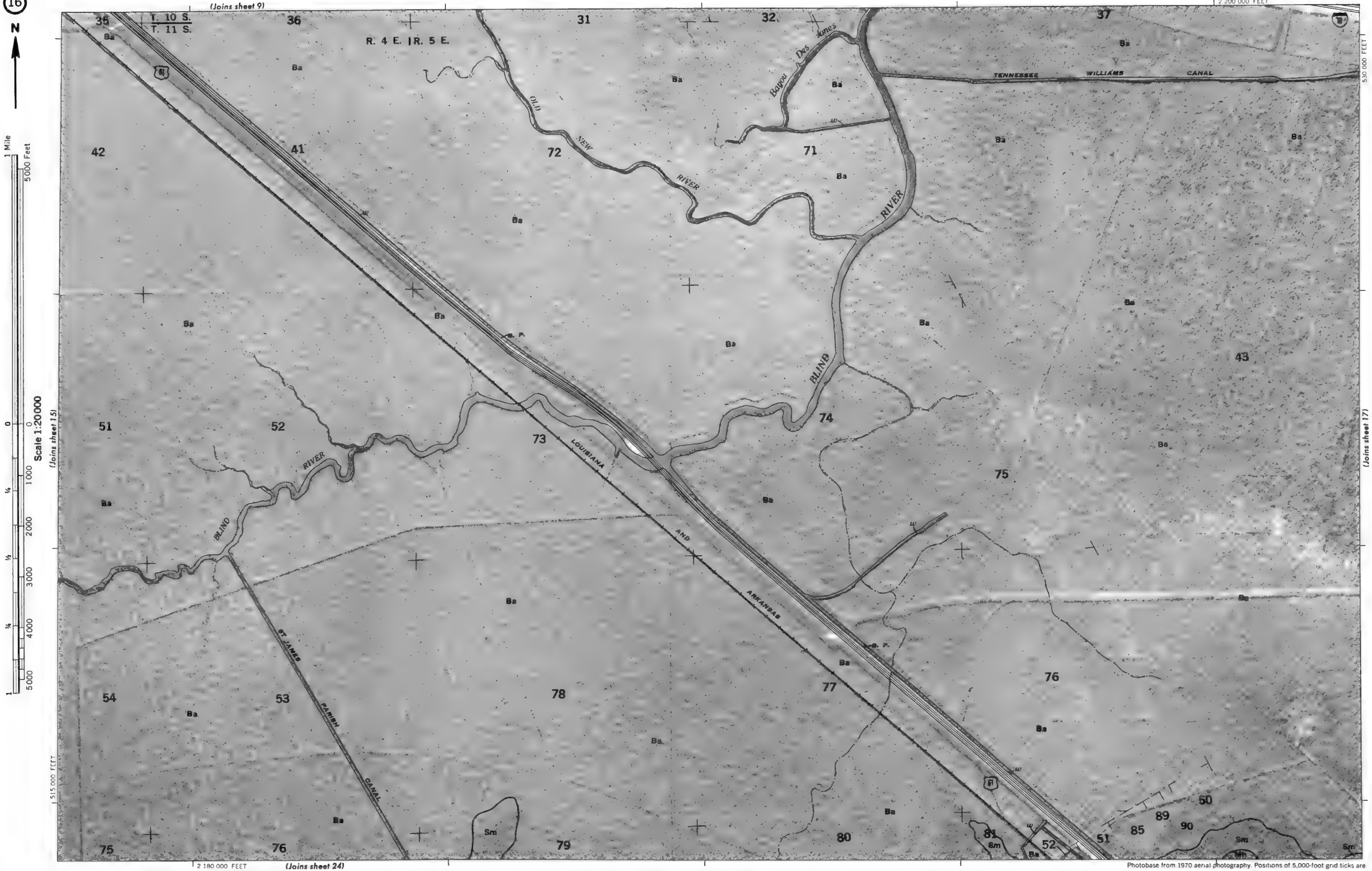

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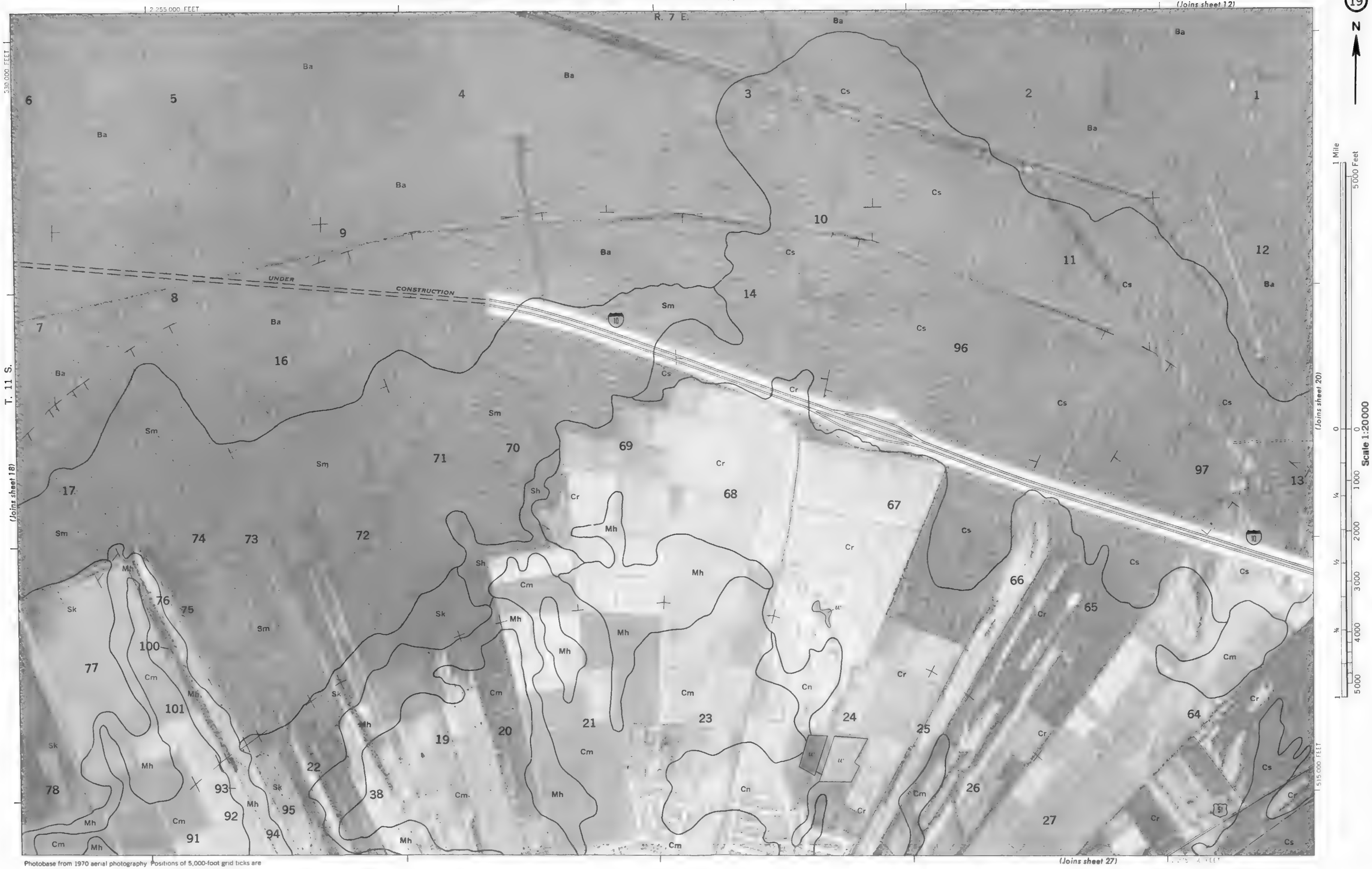

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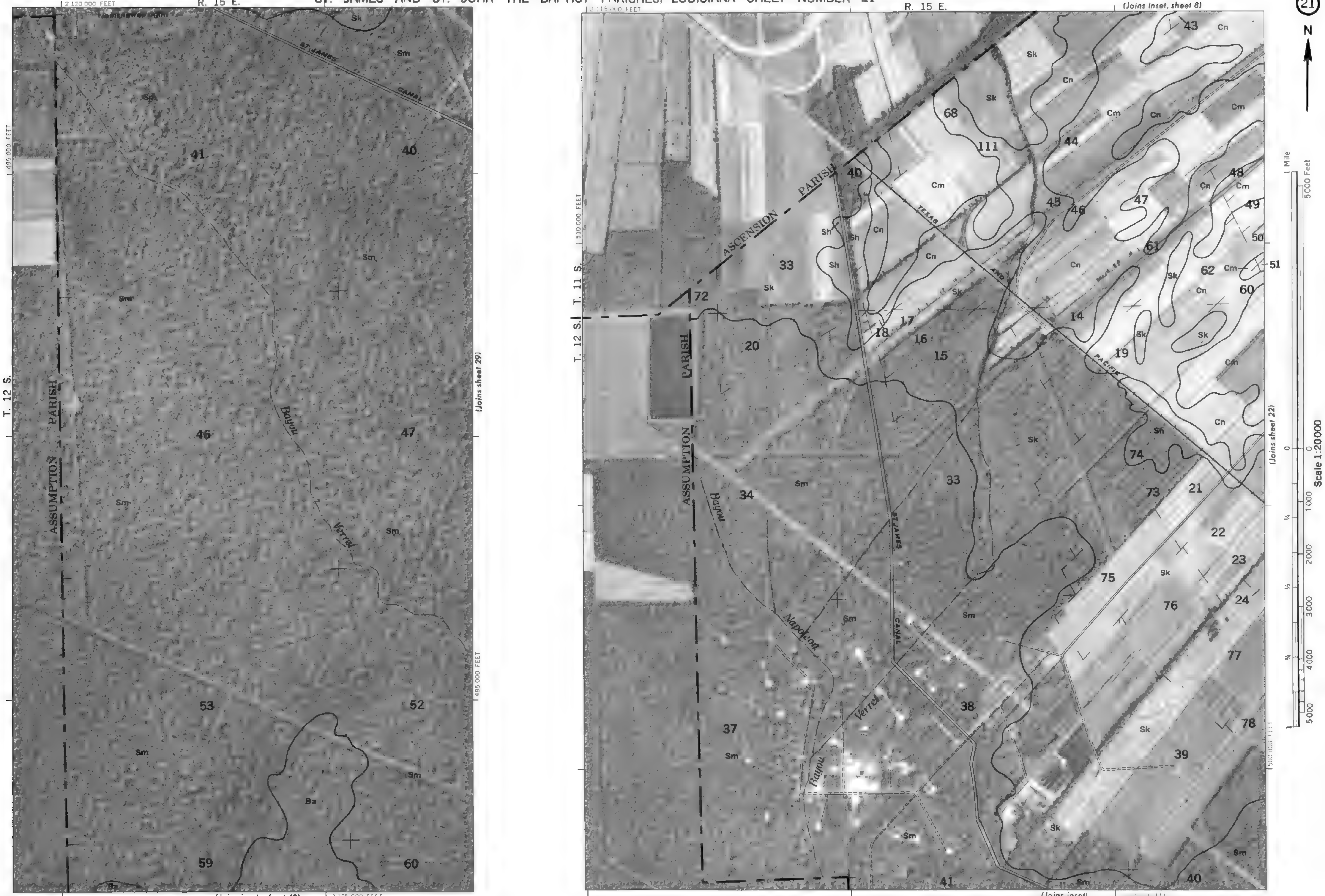

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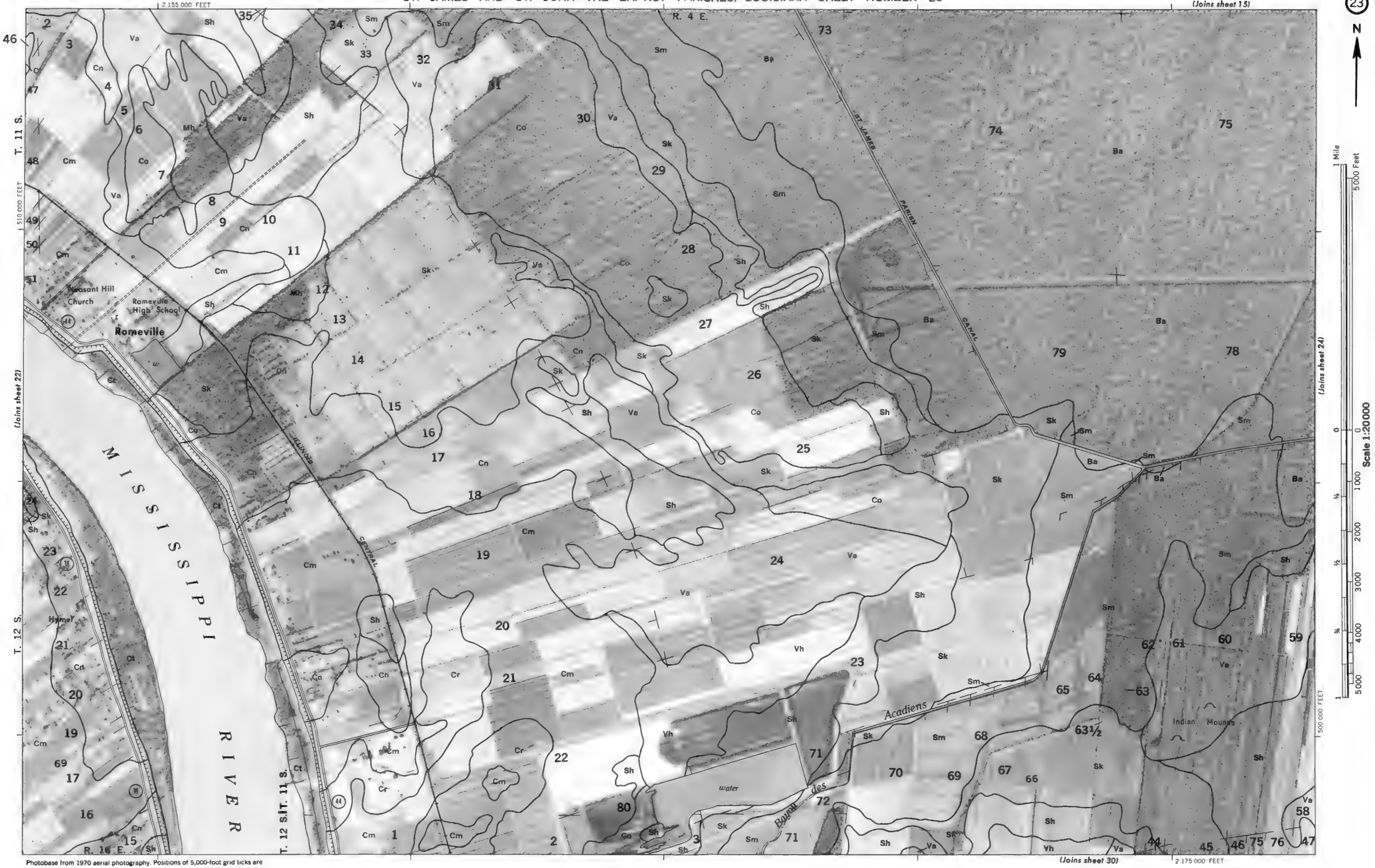

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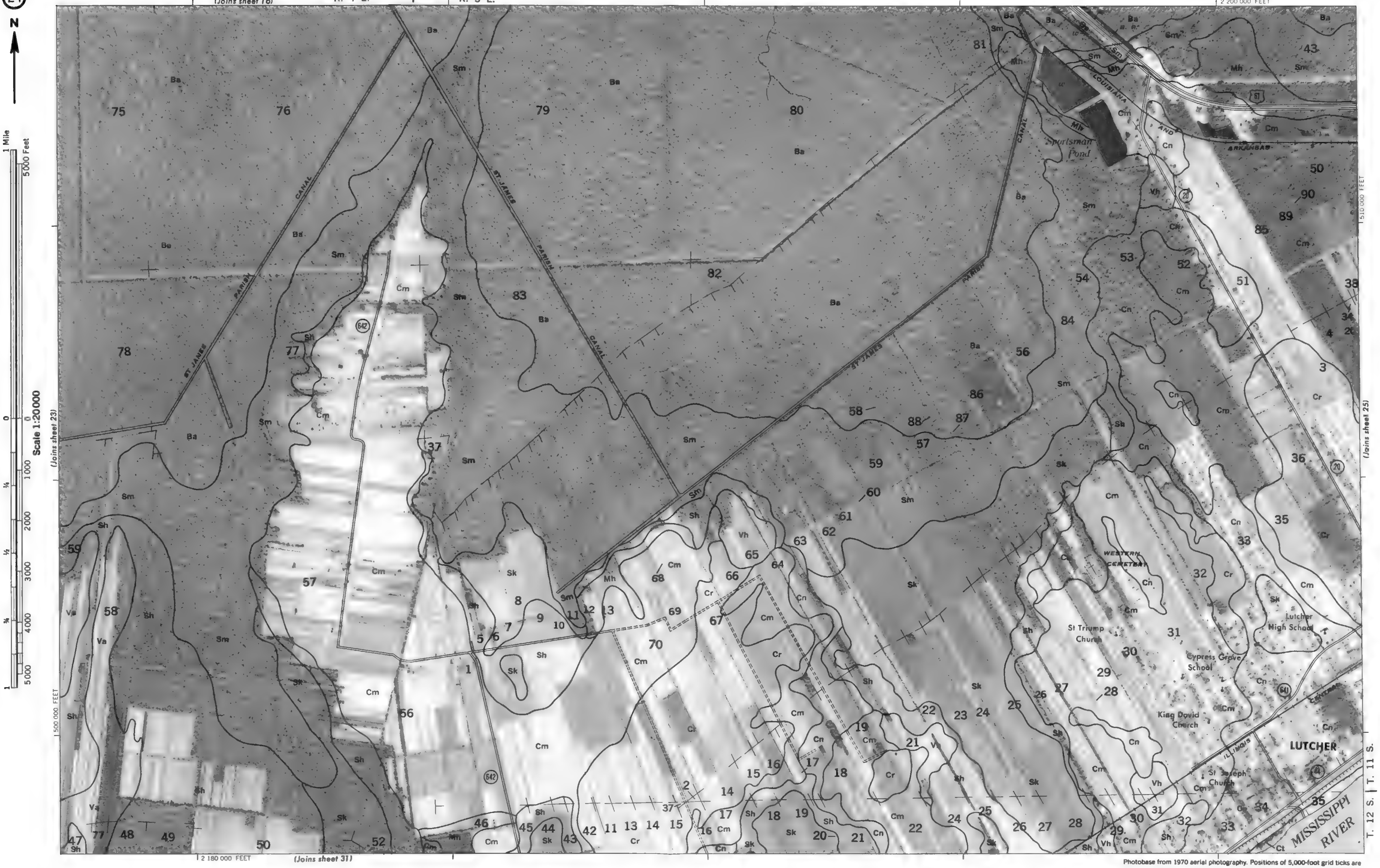

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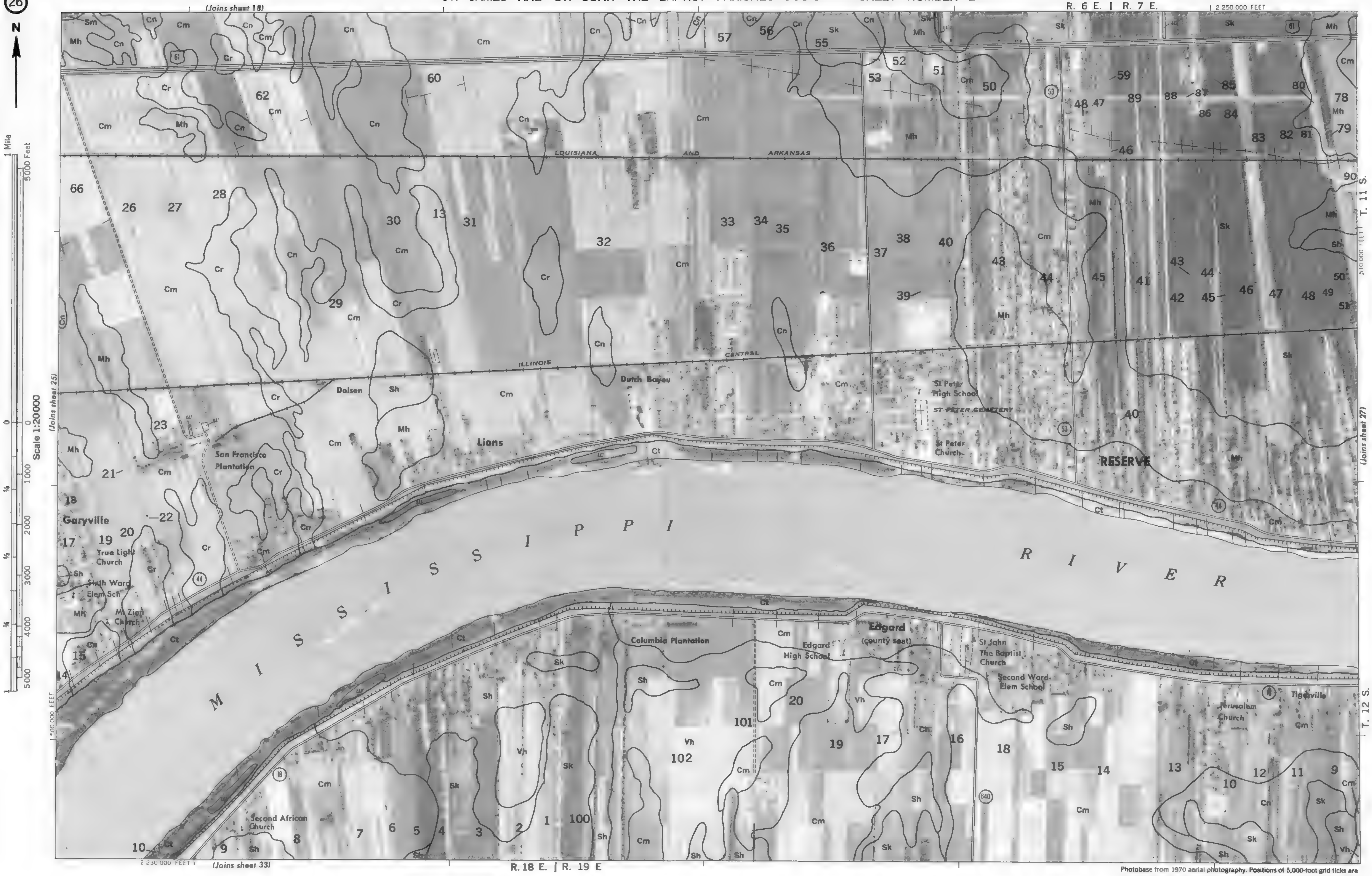
ST. JAMES AND ST. JOHN THE BAPTIST PARISHES LOUISIANA—SHEET NUMBER 26



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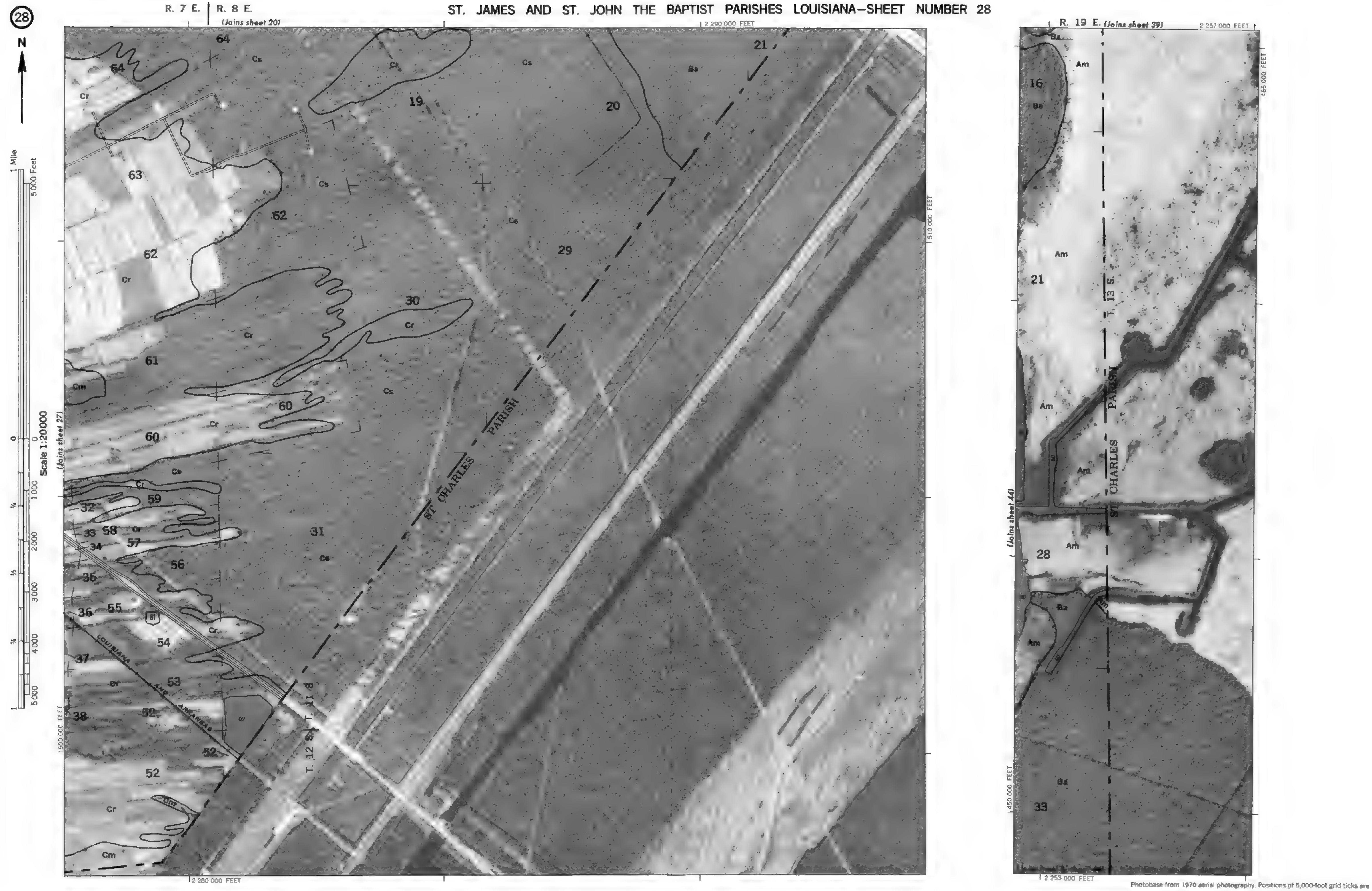
Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

ST. JAMES AND ST. JOHN THE BAPTIST PARISHES LOUISIANA—SHEET NUMBER 28



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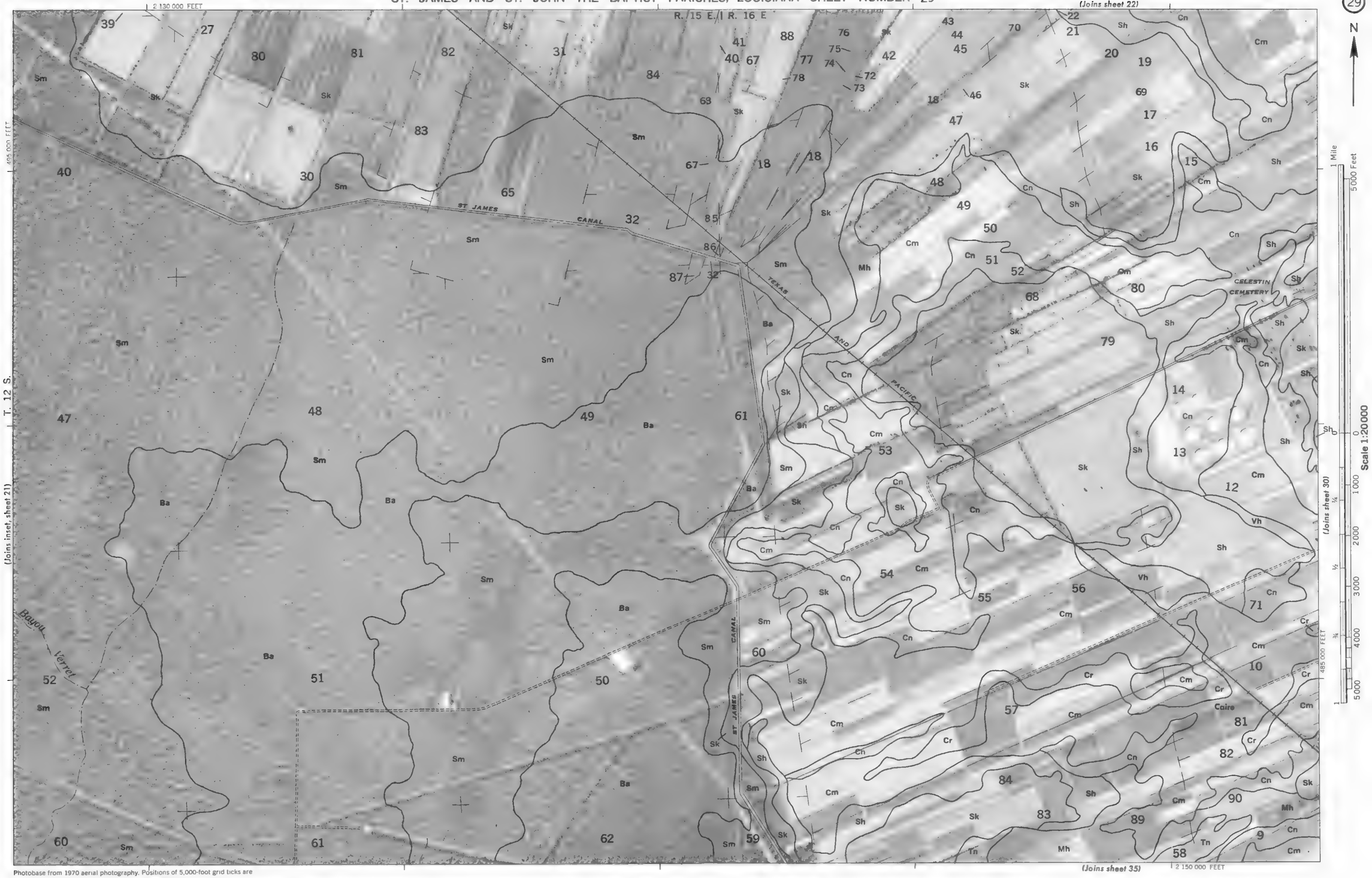

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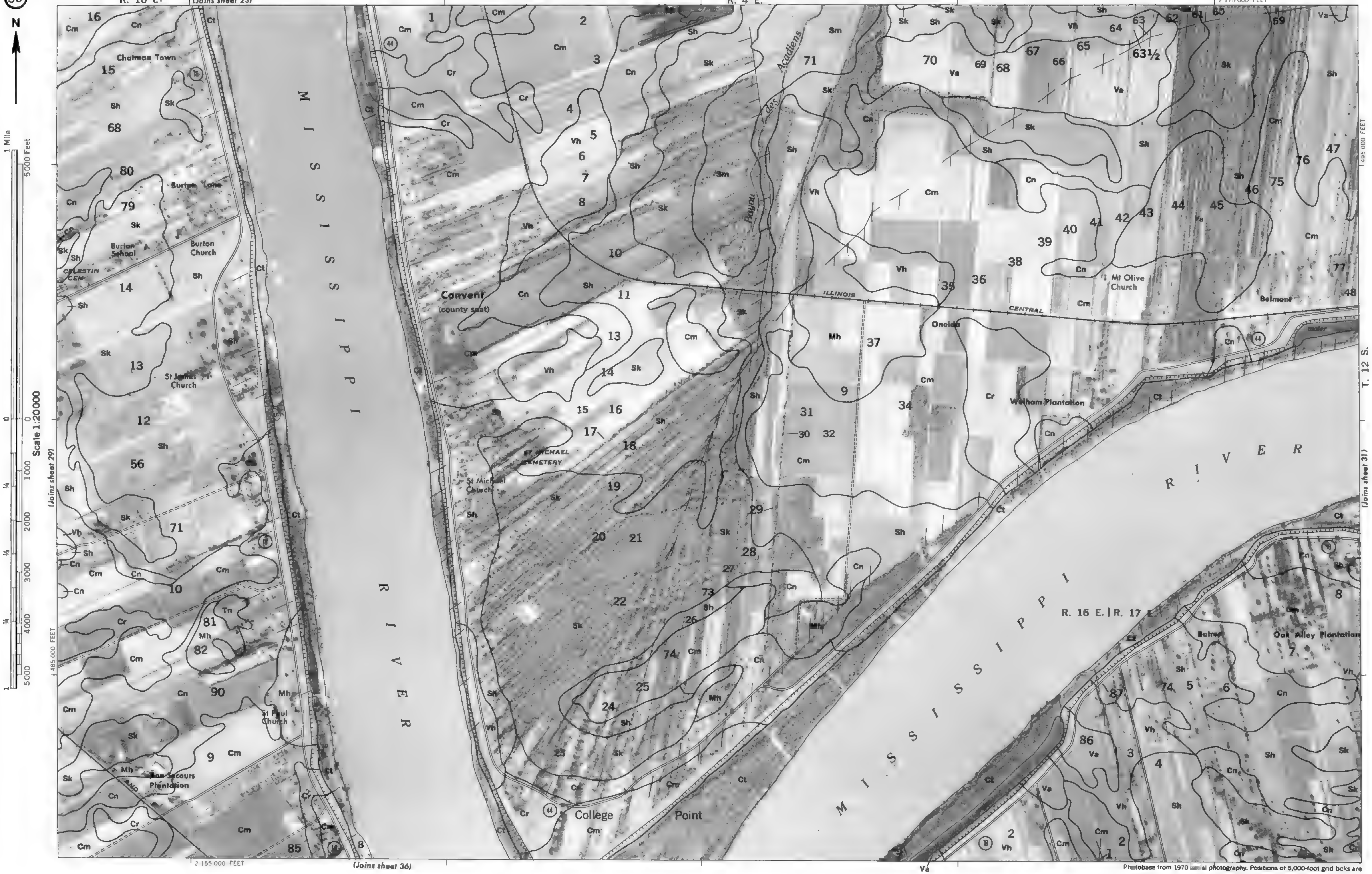

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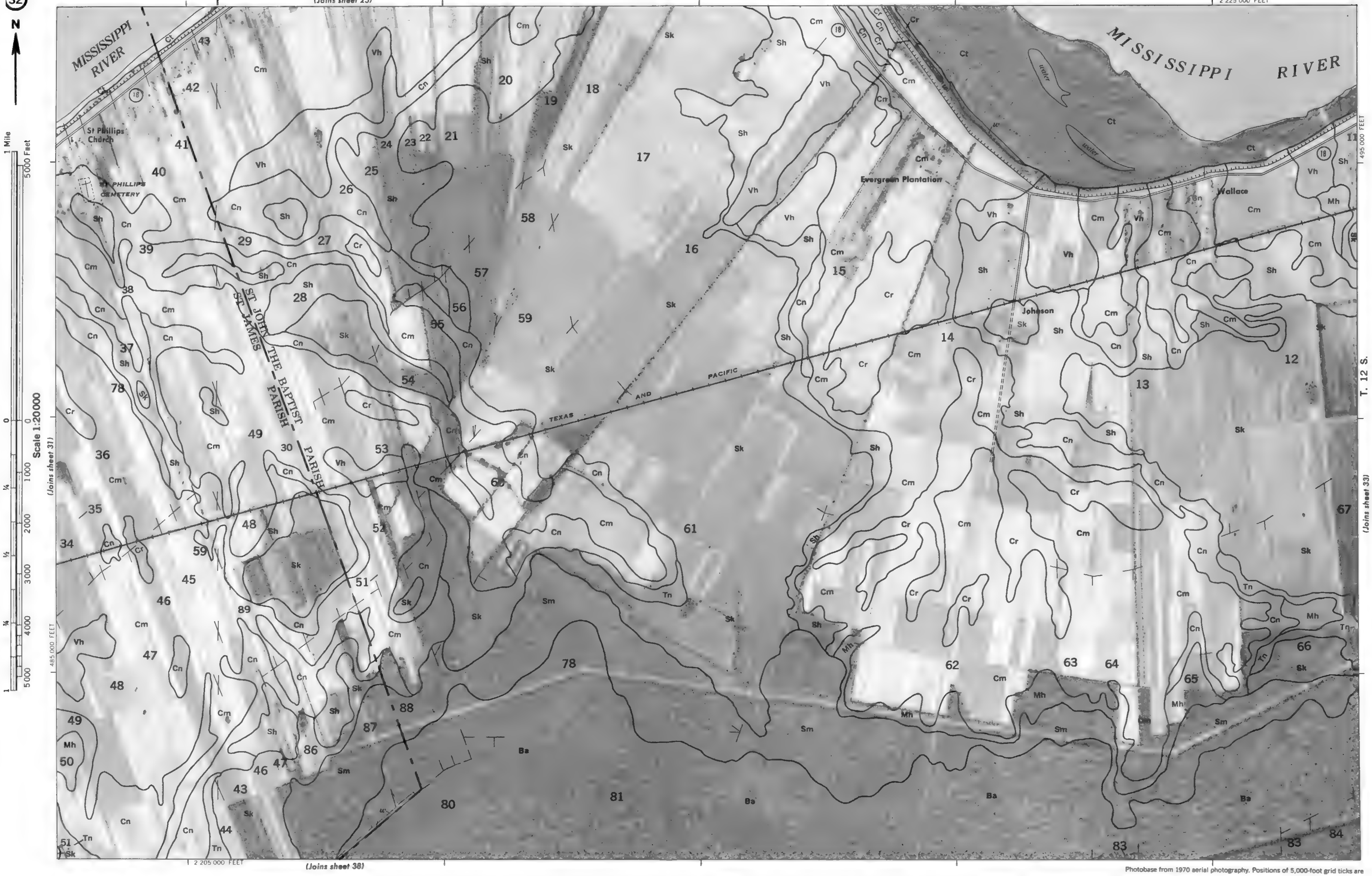
ST. JAMES AND ST. JOHN THE BAPTIST PARISHES, LOUISIANA—SHEET NUMBER 31

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.



Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

2 230 000 FEET

(Joins sheet 26)

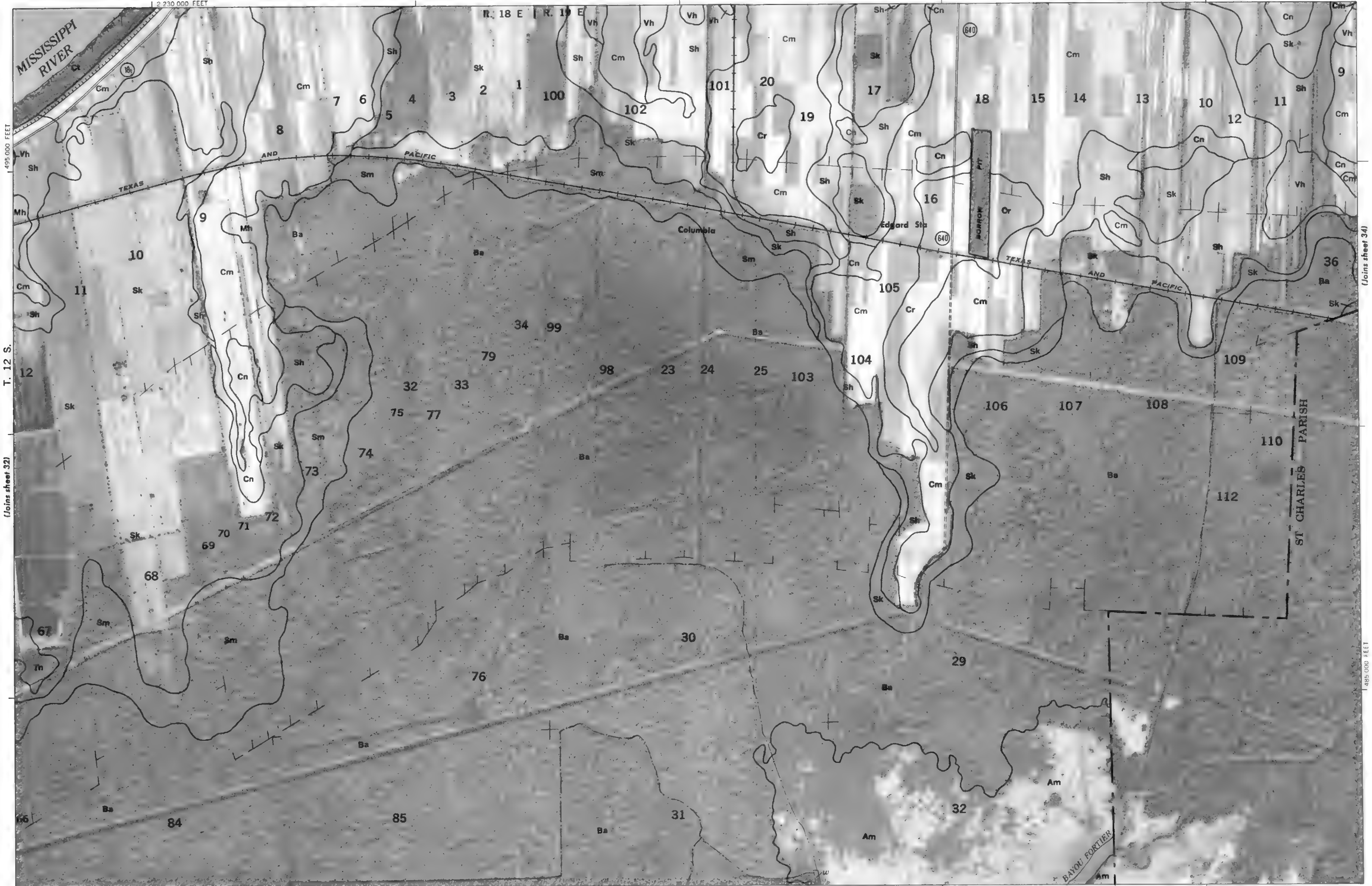
N

495 000 FEET

T. 12 S.

(Joins sheet 32)

(Joins sheet 34)



1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
¼
½
¾
1
Scale 1:20000

485 000 FEET

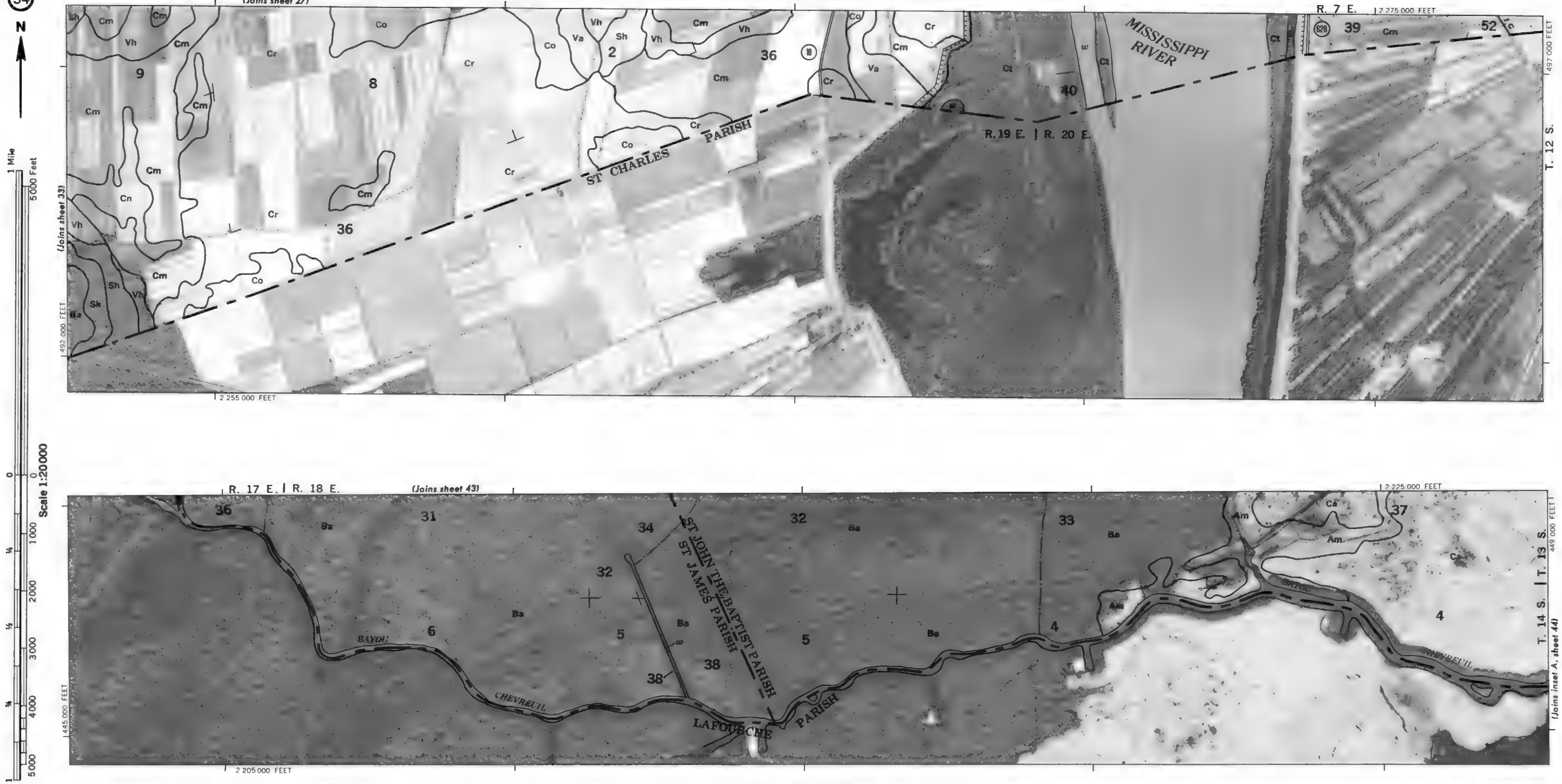
(Joins sheet 39)

2 250 000 FEET

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

ST. JAMES AND ST. JOHN THE BAPTIST PARISHES LOUISIANA—SHEET NUMBER 34

34



4 000 AND 5 000-FOOT GRID TICKS

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

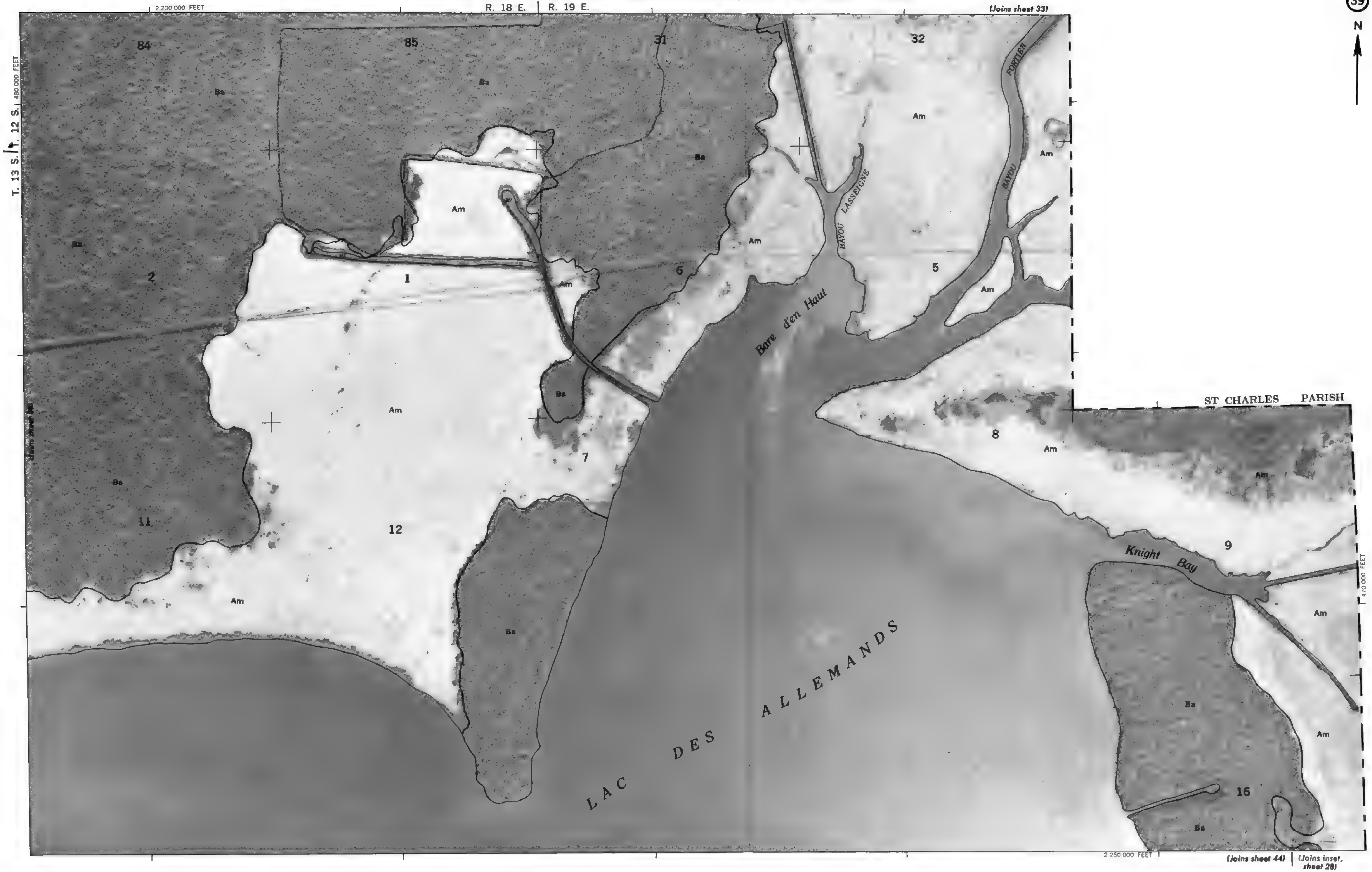
Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

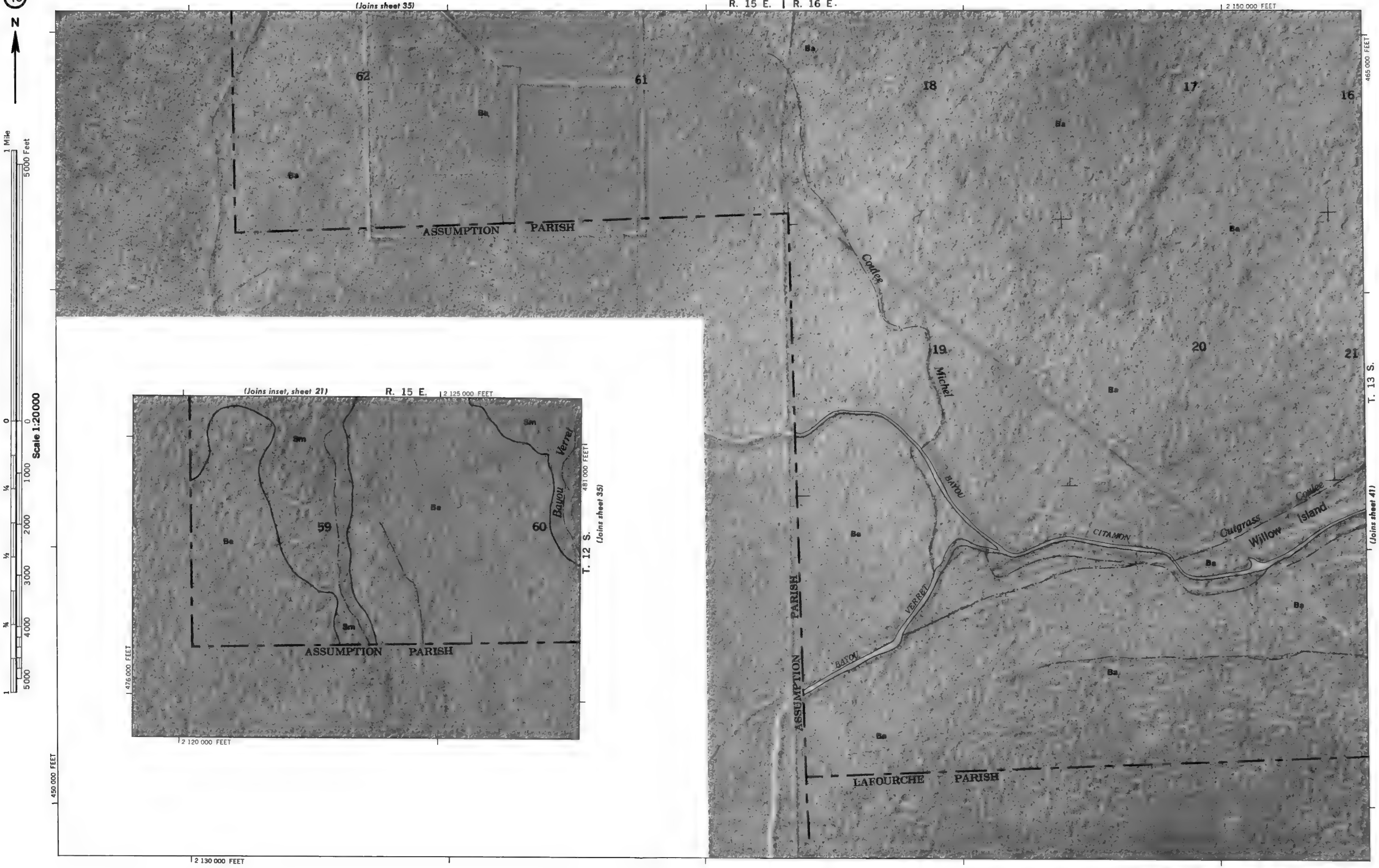
ST. JAMES AND ST. JOHN THE BAPTIST PARISHES LOUISIANA—SHEET NUMBER 38

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

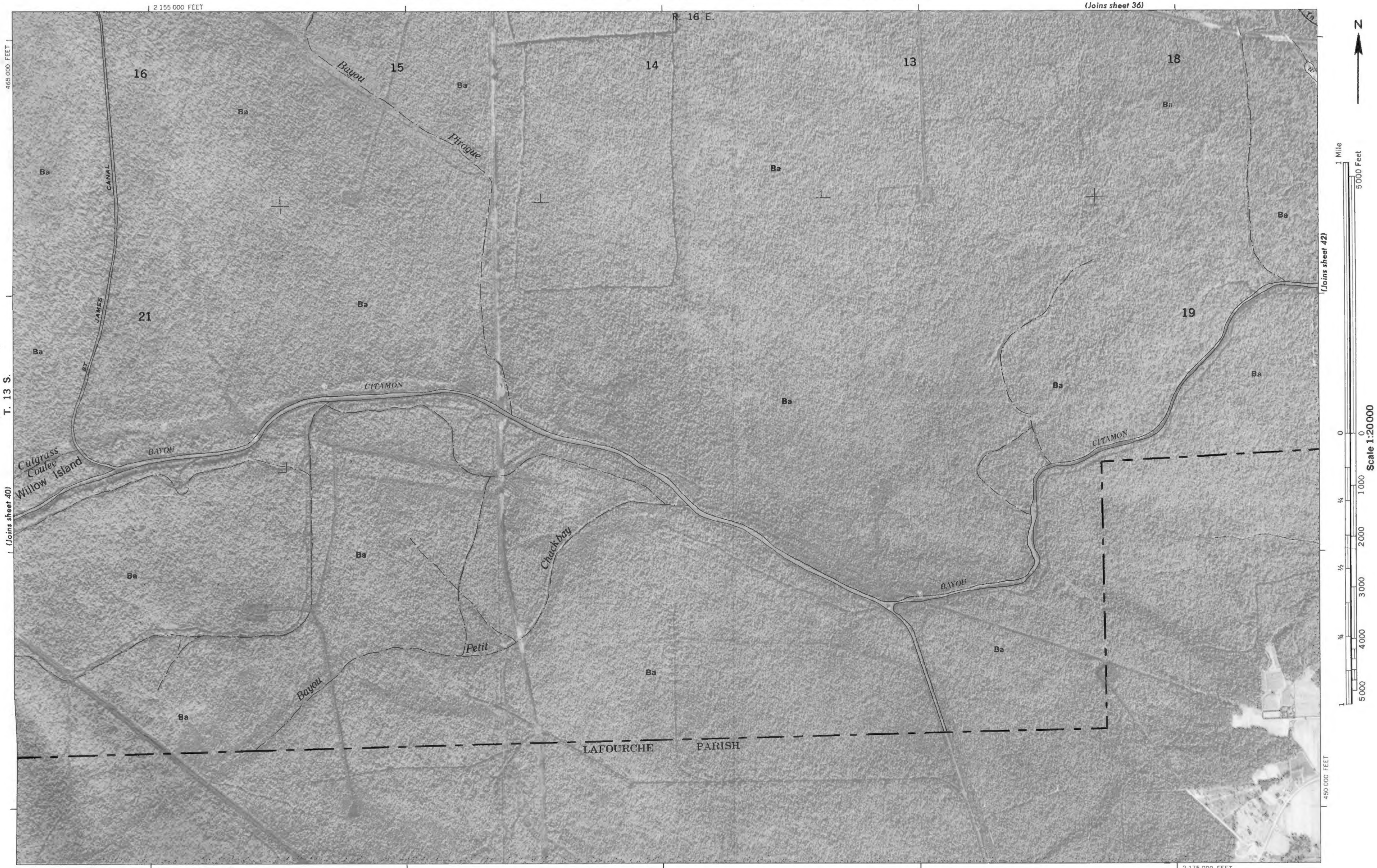
ST. JAMES AND ST. JOHN THE BAPTIST PARISHES, LOUISIANA—SHEET NUMBER 39



ST. JAMES AND ST. JOHN THE BAPTIST PARISHES LOUISIANA—SHEET NUMBER 40

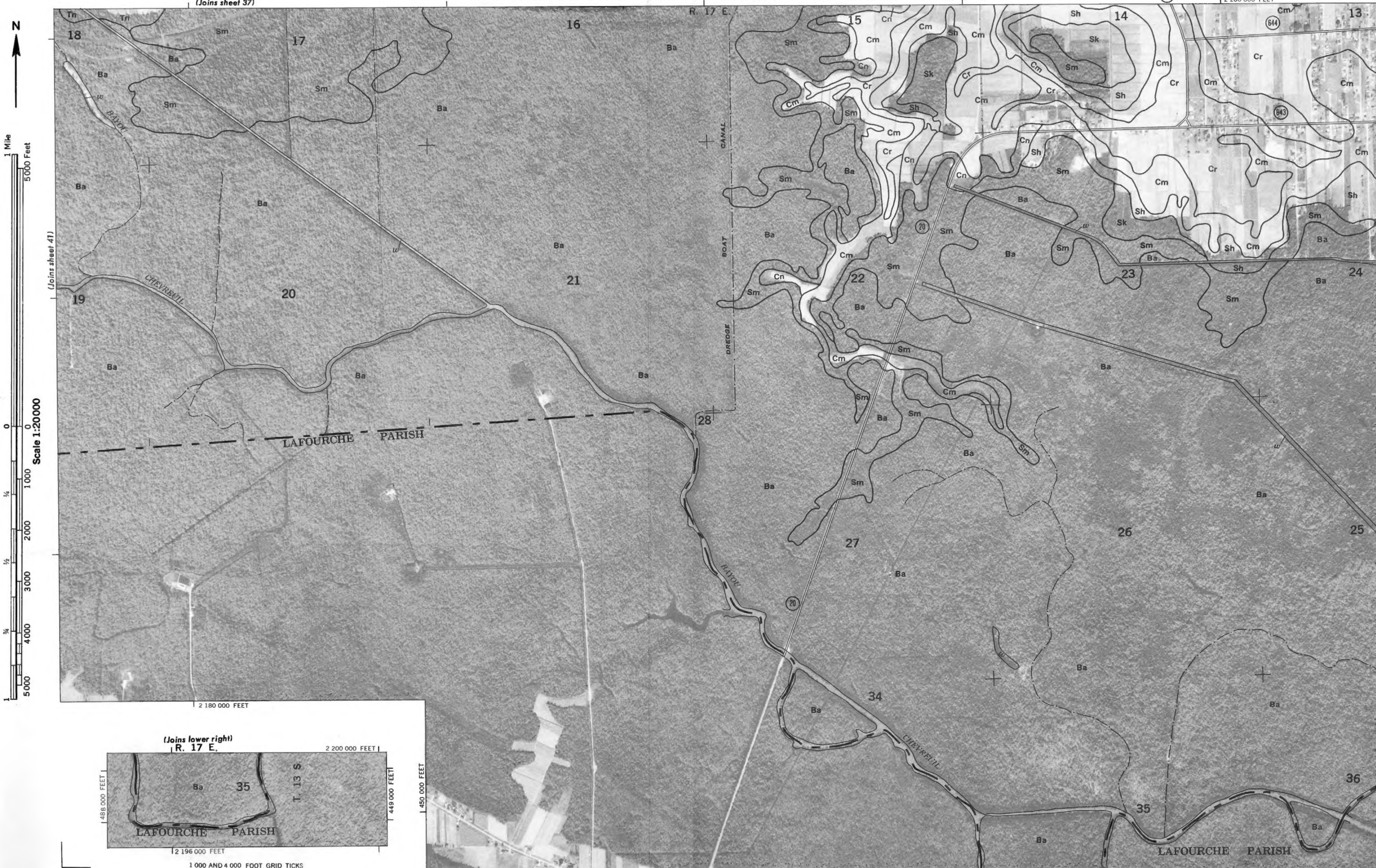


Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

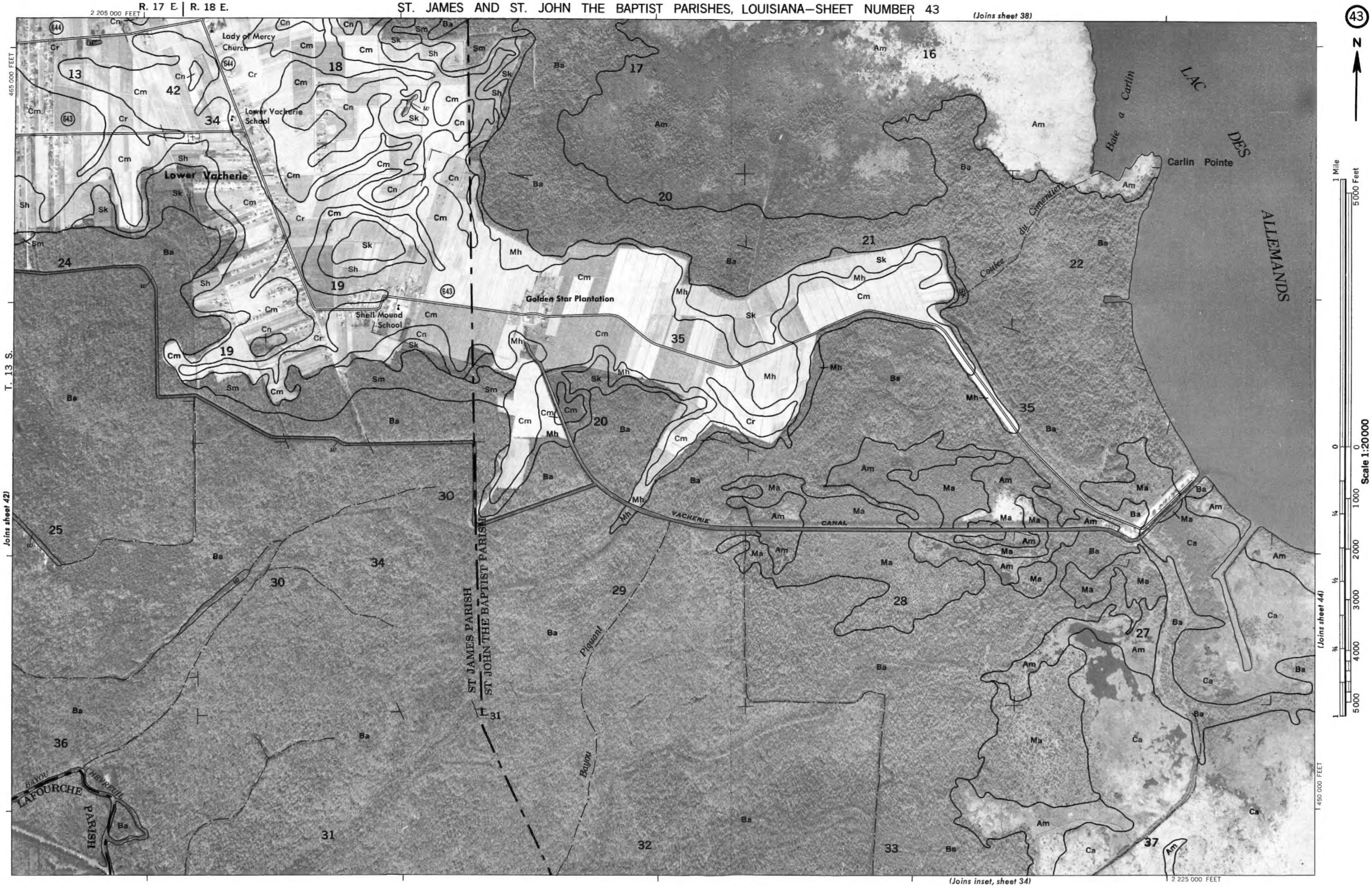


Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.

ST. JAMES AND ST. JOHN THE BAPTIST PARISHES LOUISIANA—SHEET NUMBER 42



Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.


R. 17 E.
R. 18 E.
2 205 000 FEET
(Joins sheet 38)
43
N
465 000 FEET
T. 13 S.
Joins sheet 42)
(Joins sheet 44)
(Joins inset, sheet 34)
2 225 000 FEET
450 000 FEET
1 Mile
5000 Feet
Scale 1:20000
Lady of Mercy Church
Lower Vacherie School
Lower Vacherie
Shell Mound School
Golden Star Plantation
LAC DES ALLEMANDS
Baie a Carlin
Carlin Pointe
Coulee du Cimentier
VACHERIE CANAL
Bayou Piquant
ST JAMES PARISH
ST JOHN THE BAPTIST PARISH
LAFOURCHE PARISH
BAYOU CHEVREUIL
644
643
Cr
Cm
Cn
Sk
Sh
Sm
Mh
Ba
Am
Ma
Ca
13
16
17
18
19
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22
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25
27
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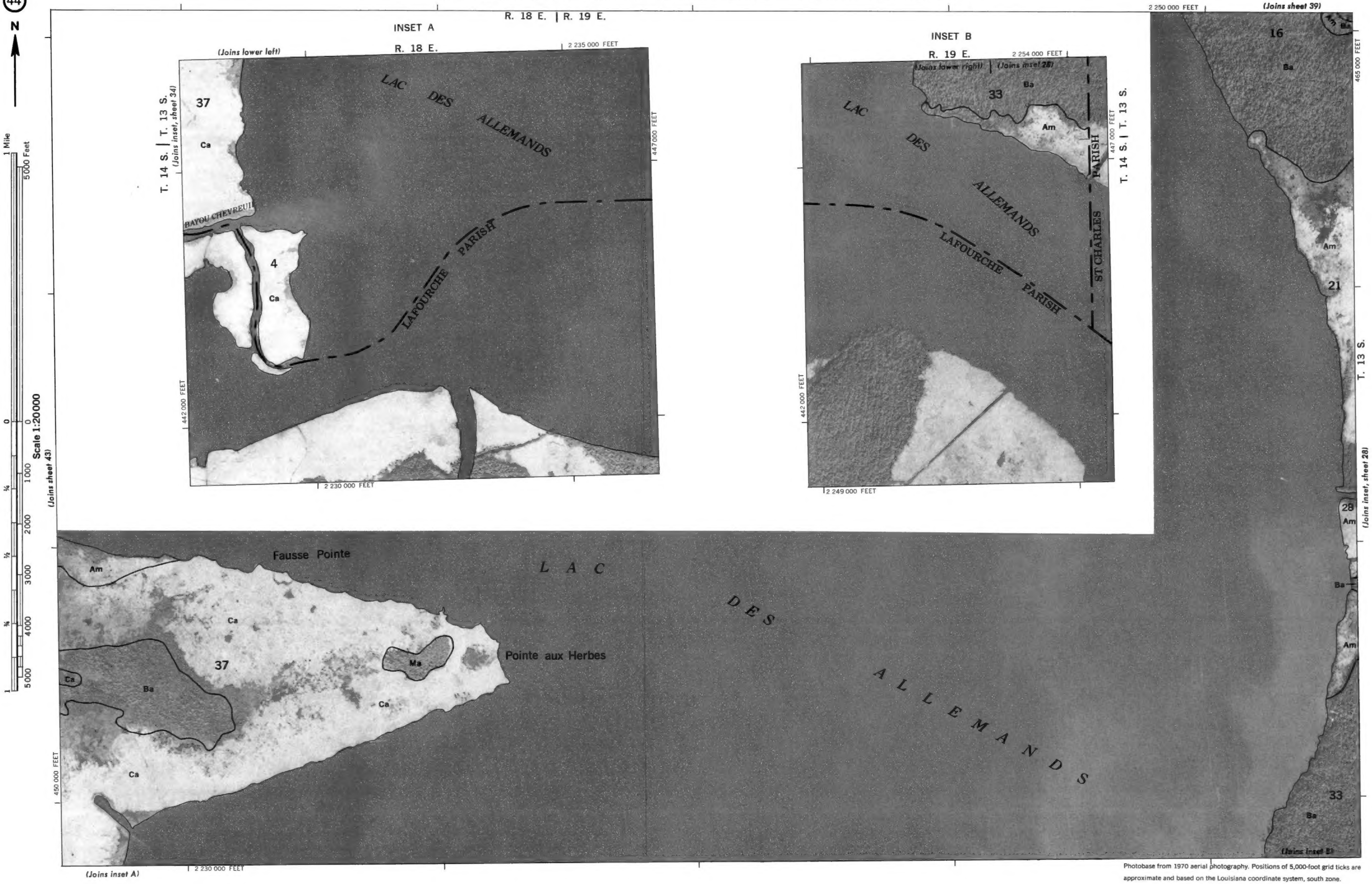
29
30
31
32
33
34
35
36
37
42



Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Louisiana coordinate system, south zone.